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ABSTRACT

This material, organized in a workbook format, was developed to be used with the non-college bound, lower one-third of the ninth-grade student population. Topics covered are flowcharts, set theory, number systems (natural numbers, whole numbers, integers, and rationals), number operations, percentage, measurement, finance, geometric constructions, statistics, and number bases. For the teacher's manual, see SE 016 407. (DT)

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DROP-IN MATHEMATICS

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WILL YOU
HIT YOUR
JOB?

SE 016 406

PREFACE

The basic material in this book was developed by eight teachers of mathematics in Arkansas Schools working on a grant to Wynne Public Schools under Title III of the Elementary and Secondary Education Act in the summer of 1966. The material was classroom tested in 1966-67, revised in the summer of 1967 and again in the summer of 1968. The material was edited for printing by Mrs. Evelyn Underwood, Mr. Ed White, Mrs. Wanda Lacy, Mrs. Judy Ahart and Mr. Gene Catterton. The editing and printing was financed by the State Title III Program.

The material was developed to be used with the non-college bound student in general and the lower one third of the ninth grade student population in particular. The material develops our number system starting with counting numbers and proceeding through rationals. As the different ideas of numbers are developed, real life problems are used to illustrate the use of the ideas. The authors believe that any teacher who uses this material will enjoy greater success if he will acquire problems from his own local area to use in addition to the ones in this book.

We wish to express appreciation to Dr. Cecil McDermott, of Hendrix College; Mr. Terry Shoemaker of the Jefferson County School in Colorado; Mr. Truett Goatcher, Supervisor in the Department of Education, and Mr. Charles Watson of the State Title III staff, who served as consultants during the revision and editing of the material.

This material was originally prepared under a grant authorized by the U. S. Office of Education through Section 301-308 of Public Law 88-10 Title III. The original project entitled "Calculators in a General Mathematics Laboratory" was sponsored by the Wynne, Arkansas, Public Schools and was directed by Mr. Gene Catterton. Six Arkansas school districts: Hope, Pine Bluff, Lewisville, Wynne, Jonesboro and Fort Smith made up the original experimental sample.

During the summer of 1971 a committee, directed by Gene Catterton and funded under section 303 of the Elementary and Secondary Education Act 91-230 by Title III section of the Arkansas Department of Education revised, up-dated and prepared the original material for printing. The committee was composed of the following teachers who used the materials: Mrs. Evelyn Underwood, Mrs. Wanda Lacy, Mr. Ed White and Mrs. Judy Ahart. Mathematics consultants to the committee were Dr. Cecil McDermott and Mr. Truett Goatcher.

Printing of these revised materials has been made possible through section 303 funds of the Elementary and Secondary Education Act which are administered by the Title III section of the Arkansas Department of Education.

The project presented herein was performed pursuant to a grant from the U. S. Office of Education, Department of Health, Education and Welfare. However, the materials presented do not necessarily reflect the position or policy of the U. S. Office of Education and no official endorsement by the U. S. Office of Education should be inferred.

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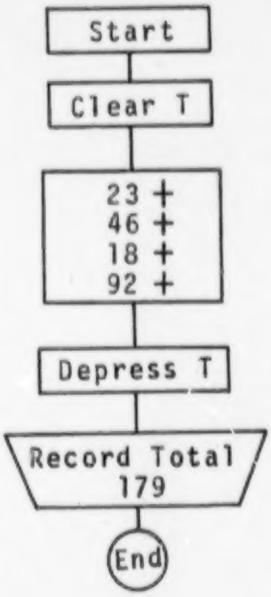
UNIT I

FLOWCHARTS

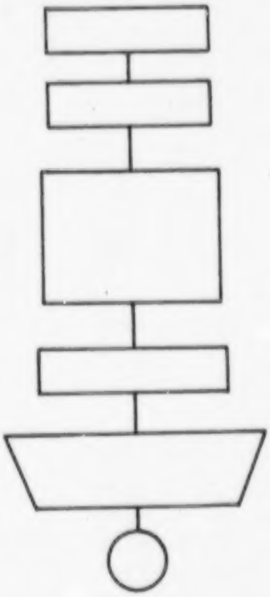
Example 1

23
46
18
+92


Start
Clear T
23 +
46 +
18 +
92 +
Depress T
Record Total
179
End

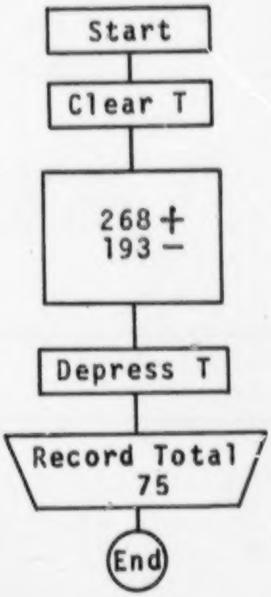
Exercise 1

98
192
471
+64



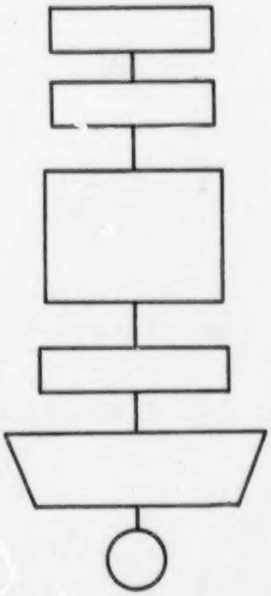
Example 2

268
−193


Start
Clear T
268 +
193 −
Depress T
Record Total
75
End

Exercise 2

541
−267



Calculator Practice

Add:

1.	2.	3.	4.	5.
567	349	1398	5610	3480
350	764	9871	2345	1156
910	610	6070	3387	2595
590	444	6767	4353	5687
56	600	674	7008	76
542	876	9876	7654	62

6.	7.	8.	9.	10.
2765	9874	7190	1000	98,709
1133	1138	1117	9999	38,470
4756	3889	3030	9510	10,489
9876	1098	1819	9722	45,901
7364	9485	5867	9206	60,007
4685	9874	9765	2094	98,764
1980	1010	9001	1037	76,347

Subtract:

11.	12.	13.	14.
9087	7865	890,765	90,876
-4580	-1098	-91,081	-9,871

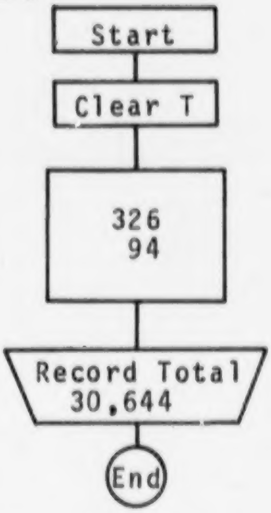
15.	16.	17.
100,098	1,098,765,432	9,080,705,050
-8,761	-78,965,190	- 98,765,430

18. 983,765 - 18,765 = ____________________

19. 9,876,543,210 - 123,456,789 = ____________________

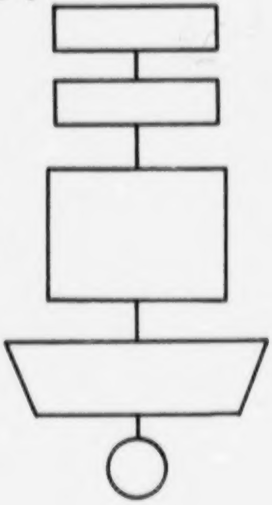
Example 3.

326
x 94

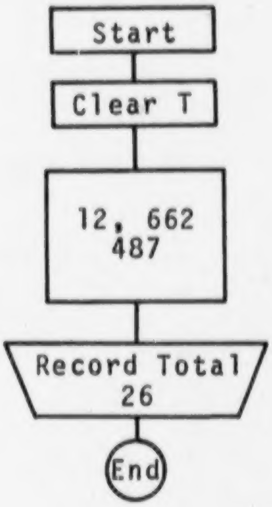

Start
Clear T
326
94
Record Total
30,644
End

Exercise 3.

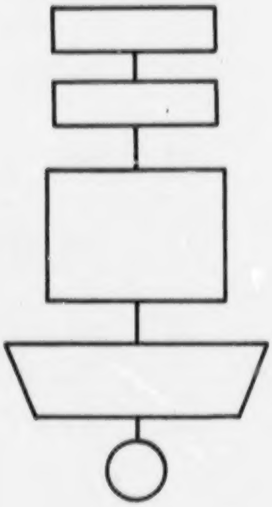
492
x 87



Example 4.
12,662 ÷ 487 =


Start
Clear T
12, 662
487
Record Total
26
End

Exercise 4.
8473 ÷ 37 =



Calculator Practice

Multiply:

1. 4657 x431

2. 6780 x328

3. 1098 x19

4. 675,478 x49,761

5. 9076 x57

6. 98,765 x76

7. 90,100 x107

8. 3,456,789 x567

9. 76,610,987 x 1,098 = ____________________

10. 98,761,000 x 5,678 = ____________________

Divide:

11. 10,600 ÷ 25 = __________

12. 952 ÷ 56 = __________

13. 9408 ÷ 112 = __________

14. 3375 ÷ 15 = __________

15. 5951 ÷ 11 = __________

16. 14,518 ÷ 17 = __________

17. 350,027 ÷ 541 = __________

18. 128,388 ÷ 823 = __________

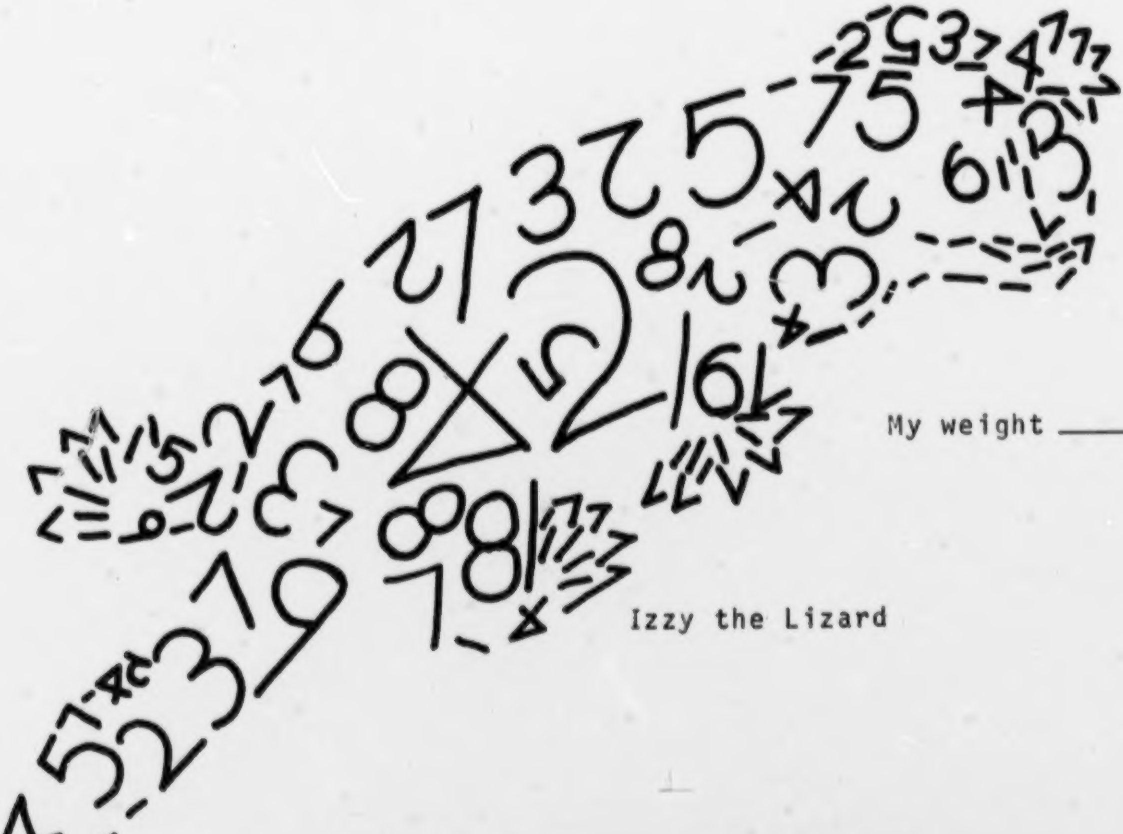
19. 666,000 ÷ 150 = __________

20. 99,661 $\overline{)219{,}254{,}200}$

Which Is Heavier?

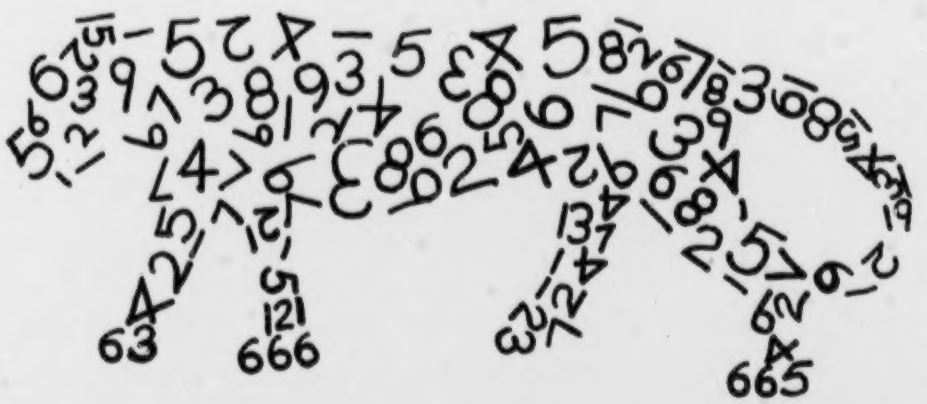
Every line segment is a one digit numeral.

The 6's are curved;
the 9's are straight.
Add all of my numbers
to find my weight.



My weight ________

Izzy the Lizard



Bengy the Tiger

My weight ________

UNIT II

SETS

A. Set: A set is a collection of objects or ideas.

Examples:

1. Set of dishes
2. Pupils in this room
3. Leaves on a certain tree
4. Symbols for making flowcharts
5. Grains of sand on the earth
6. Stars

Exercises

1. Give 3 examples of sets in this room. ________________
____
____

2. Give 3 examples of sets in your home. ________________
____
____

3. Give 3 examples of student groups in your school.
____
____
____

B. Elements: Elements are the members belonging to a set. Elements may be described or listed.

Exercises

Description — Listed Elements

1. Set A={Starter set of dishes} ={Plates,cups, saucers,bowls}
2. Set B={Teacher of this class} ={______}
3. Set C={The set of letters in my name} ={______}
4. Set D={______} ={Dimes,nickels,pennies}
5. Set E={______} ={I,V,X,L,C,D,M}
6. Set F={Favorite record} ={______ –}
7. Set G={The pupils in this room= }(List on another paper)

C. Finite Set: A finite set is a set in which all the elements can be counted. (There is a last element).

Exercises

Description — Listed Elements

1. Set J={The counting numbers}={1,2,3,4,...,49,50}
2. Set K={The odd numbers less than 100}={______}
3. Set L={The letters of the alphabet} ={______}
4. Set M={______} ={3,6,9,...,30,33}
5. Set N={______} ={1,3,5,7,...,27,29}
6. Set O={Set of even counting numbers between 10 and 1000}={______}

D. Infinite Set: An infinite set is a set in which all the elements cannot be counted. (There is no last element).

Examples:

1. Counting numbers
2. Even numbers
3. Multiples of 3
4. Odd numbers
5. Rational numbers
6. Whole numbers

Many infinite sets can be listed by pattern.

Example:

Set Z = Set of all counting numbers = {1, 2, 3, 4, 5,...}

Exercises

1. Set Y = Set of all even counting numbers = {______________}
2. Set X = Set of all counting numbers which are multiples of three = {______________}
3. Set W = ______________________ = {4, 8, 12, 16, 20,...}
4. Set V = ______________________ = {4, 9, 16, 25, 36,...}

E. Empty or null sets: A set having no elements is the empty or null set. This is written { } or ø

Examples:

1. Set U = The students in this class who are college graduates. ø
2. Set T = The people in this class who ride tricycles to school. { }

Exercises

1. Set S = {Women who have been President of the United States.} ____________
2. How many elements are the set of Jolly Green Giants in this class room? ____________

F. Subset: A set whose elements are also members of another set is called a subset.

Examples:

1. Set A = $\{1, 2, 3, 4, 5, 6, 7\}$

   Set B = $\{1, 2, 3, 4\}$

   Set C = $\{1, 2, 3, 4, 5, 6\}$

   Set D = $\{1, 2, 3, 4, 5, 6, 7\}$

   Set E = $\{1\}$

Sets B, C, D, and E are all subsets of Set A.

2. Set A = $\{=, -, X, \div\}$
   Set B = $\{=, X\}$

Set B is a subset of Set A.

3. Set S = $\{1, 2, 3\}$

   Set T = $\{1, 2, 3, 4, 5, ...\}$

Set S is a subset of Set T.

The null set is a subset of every set.

Every set is a subset of itself. (Set S is a subset of Set S)
(Set T is a subset of Set T)

Exercises

1. Set N = {Sunday, Saturday, Friday}
   a. List all the subsets of one element.
   b. List all the subsets of two elements.
   c. List all the subsets of three elements.
   d. List all the subsets of four elements.
   e. Is the null set a subset of this set? ____________
   f. How many subsets did you obtain from Set N? ____________

2. Given Set N = {Mary, Jane, Joe}

   a. List all subsets in Set N.

   b. What kind of a set is Set N?

3. Given Set S = {3, 7, 6, 1}

   a. List all subsets of one element in Set S. ____________

   b. List all subsets of two elements in Set S. ____________

   c. List all subsets of three elements in Set S. ____________

   d. List all subsets of four elements in Set S. ____________

   e. List the elements of a set of which S is a subset. ____________

4. How many subsets are possible:

   a. from a three element set? ____________________

   b. from a four element set? ____________________

G. Venn Diagrams: Venn diagrams are drawings that show the relation of sets and subsets.

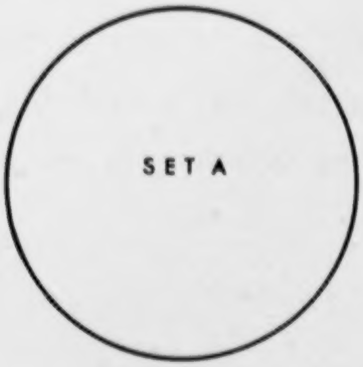
Example.

1. Set A = {All students in school}

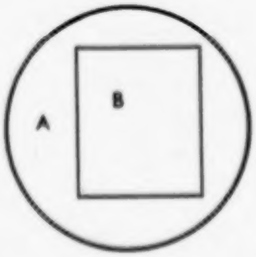
   Set B = {All students assigned to this room this hour}

   Set C = {All boys assigned to this room this hour}

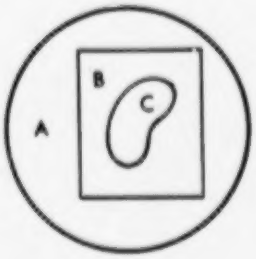
   Let Set A be pictured as a geometric figure such as a circle.



Since Set B is a subset of Set A, it may be pictured as a smaller figure inside the larger figure.



Since Set C is a subset of Set B, it may be represented by an even smaller figure.



Is Set C a subset of Set A?

Exercises

Use Venn diagrams to show the relationship between the following sets.

1. Set A is the set of all boys in our state.

   Set R is the set of all boys in our school.

   Set S is the set of all boys in our mathematics class.

2. Set T is the set of counting numbers less than 50.

   Set G is the set of even counting numbers less than 50.

   Set M is the set of counting numbers less than 50 which can be divided by three.

H. Intersection of Sets: The intersection of two or more sets is a set containing all elements that are common to the individual sets.

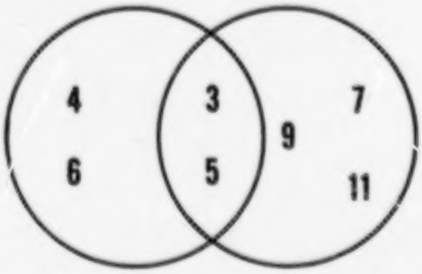
Example:

1. Set A = $\{3, 4, 5, 6\}$ Set Y = $\{3, 5, 7, 9, 11\}$

   List the set of elements which belong to both Set A and Set Y.

   Set N = $\{3, 5\}$

Set N is formed by the intersection of Set A and Set Y. The following Venn diagram shows this intersection.



Exercises

1. Set A =}1, 2, 3{

   Set B =}3, 4, 5{

   Set C =}Set A intersection Set B{= }____________________{

   Draw a Venn diagram of these sets. Shade only the intersection. (Set C)

2. The set of even numbers 1 through 20 =}________________{= Set K.

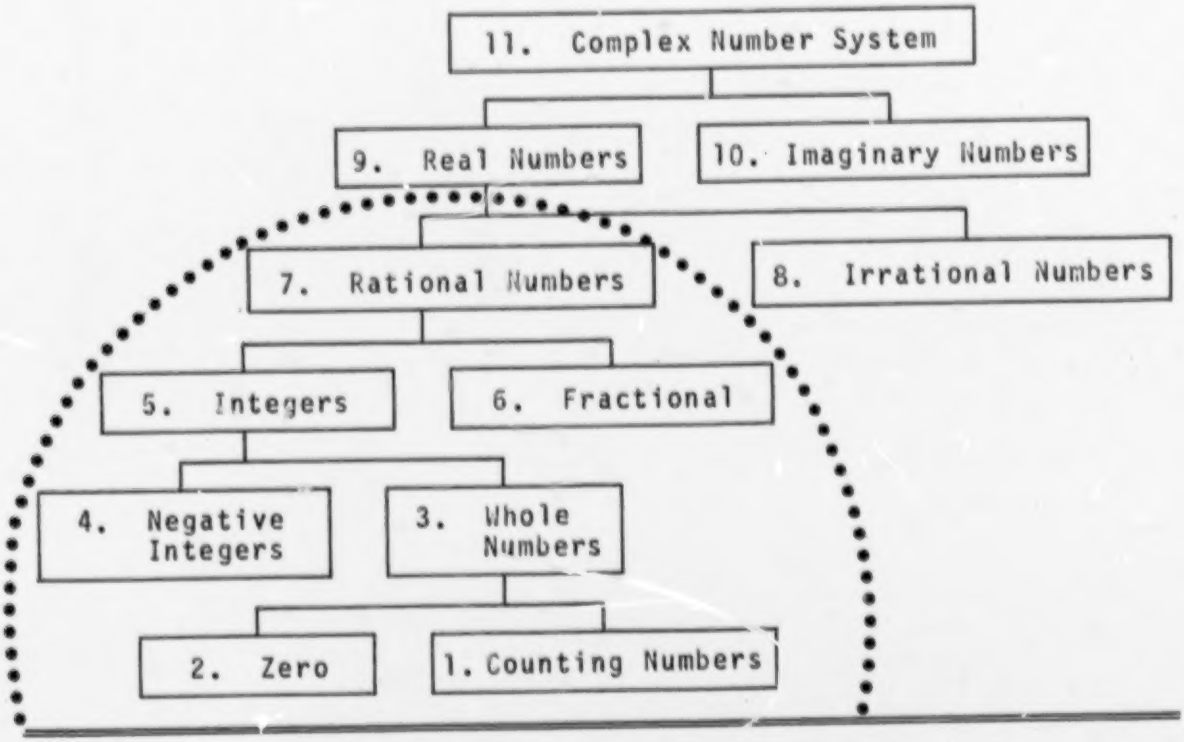
   The set of numbers 1 through 20 which can be divided by three =(__________________________)= Set J.

   The intersection of Set K and Set J =}__________________{= Set D.

   Show these sets using a Venn diagram.

I. Number System: A set of numbers that obeys a definite set of laws when added, substracted, multiplied or divided.

Infinite sets play an important role in the study of mathematics. The outline of our number system involves several infinite subsets.


11. Complex Number System
9. Real Numbers
10. Imaginary Numbers
7. Rational Numbers
8. Irrational Numbers
5. Integers
6. Fractional
4. Negative Integers
3. Whole Numbers
2. Zero
1. Counting Numbers

What is the only subset above which is not infinite? ____________

Our study will be mainly about the sets in the dotted line. We will see why we need these sets of numbers and what they are.

Can you give an example of a number from each subset in the outline?

Set Number: 1. ______ 7. ______
2. ______ 8. ______
3. ______ 9. ______
4. ______ 10. ______
5. ______ 11. ______
6. ______

J. Renaming Numbers: Every number has many names.

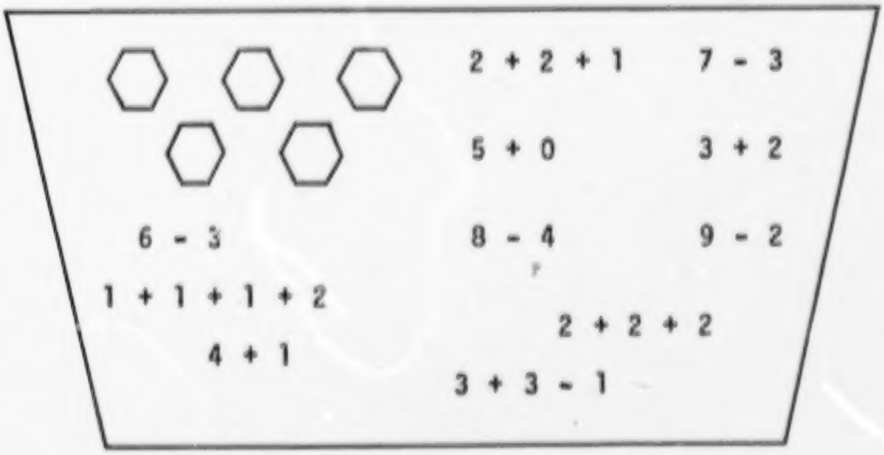
Exercises

1. List ten names for the number (10).

2. Draw lines from 6 to all other names for 6 that you can find in this box.

(8 ÷ 2)	(7 + 3)	(5 + 1)
(3 + 3)	6	(11 - 6)
(1 + 11)	(10 - 5)	(4 + 2)

3. Draw a loop around all those number names which tell how many ⬡ 's you see in the picture.



2 + 2 + 1

7 - 3

5 + 0

3 + 2

6 - 3

8 - 4

9 - 2

1 + 1 + 1 + 2

2 + 2 + 2

4 + 1

3 + 3 - 1

UNIT III

COUNTING NUMBERS

A. Investigation of Counting Numbers

Exercises

_______ 1. How many members are in your family?

_______ 2. How many mathematics books do you have in your home?

_______ 3. What is the use of the black cable you often find laid across a highway or street?

_______ 4. How many windows are in your home?

_______ 5. How many desks are in this mathematics classroom?

_______ 6. How many students are there in this mathematics class?

_______ 7. How many words do you count on this page?

_______ 8. What is the total number of letters used in writing the words on this page?

_______ 9. What is the average number of letters used per word?

Exercises

From one counting number to the next counting number

1. 13 + ○ = 14 2. 6 + 1 = ○
3. ○ + 1 = 124 4. 1256 + ○ = 1257
5. a. ○ + ○ + ○ = 3
   b. ○ + ○ = 3

6. a. ○ + ○ + ○ + ○ = 4
   b. ○ + ○ = 4
   c. 3 + ○ = 4

7. If any counting number is chosen how do you find the next counting number? ______________________

8. a. What are the different names for the number four in exercise 6?

   b. Is there a difference between "b" and "c" in exercise 6?

   c. Can you write exercise 6 in still another way?

Calculator Practice

1. 21
3
52
61

2. 6
9
8
7
34

3. 243
257
672
999

4. 18
142
675
79
9

5. 3
476
259
8
21

6. 454
7
782
7869
5

7. 454
32
4876
6
25

8. 13
723
9
72
889
92

9. 98
8
345
87
7652
56

10. 86,456
24,514
18,632
97,543
12,543
67,892
14,897
64,523
18,324
65,889

11. 2432
6719
8547
1357
6429
8165
4321
9658
4231
6614

Calculator Practice

1. 334
346
532

2. 567
876
545

3. 891
819
918

4. 156
348
763

5. 245
631
893

6. 872
134
576

7. 865
544
322

8. 218
422
553

9. 871
992
332

10. 321
654
798

11. 161
385
369

12. 893
568
432

13. 354
786
825

14. 319
813
457

15. 562
137
689

16. 154
632
987

17. 654
321
811

18. 635
274
862

Practical Application

Date 5-26 1971
M Sharon Long
No.
Reg. No. Clerk ACCOUNT FORWARDED

1	Tuna	44
2	Peas	18
3	Punch	41
4	Olives	42
5	Cheese	41
6	P. Chips	39
7	Pretzels	29
8	P. + Beans	18
9	P. Chops	24
10	Cookies	24
11	Envelopes	5
12		

Date 6-4 1971
M Sharon Long
No.
Reg. No. Clerk ACCOUNT FORWARDED

1	Pretzels	29
2	P. Chips	25
3	P. Chops	36
4		
5		
6		
7		
8		
9		
10		
11		
12		

```
44+
18+
41+
42+
47+
39+
29+
18+
24+
24+
 5+
29+
35+
36+
48+
41+
29+
15+
59+
31+
44+
15+
24+
84+
22+
843 T
```

Date 6-10 1971
M Sharon Long
No.
Reg. No. Clerk ACCOUNT FORWARDED

1	Potatoes	48
2	Punch	41
3	Bread	29
4	Lemons	15
5	Crisco	39
6		
7		
8		
9		
10		
11		
12		

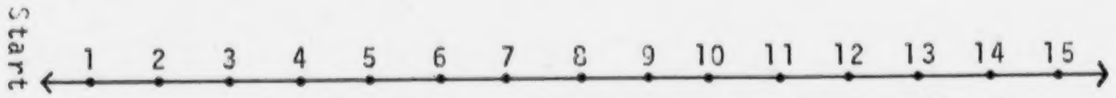
Date 6-18 1971
M Sharon Long
No.
Reg. No. Clerk ACCOUNT FORWARDED

1	Bread	31
2	Cheese	44
3	Tomatoes	15
4	Potatoes	24
5	Ham	84
6	P. Chops	22
7		
8		
9		
10		
11		
12		

Does the addition tape at the right agree with the tickets? If there are mistakes, circle them and correct them. Also, correct the total.

B. Addition of counting numbers on a number line

Example:



Think of the distance between the points as a unit of measure.

Problem 4 + 7 =

Begin at "start" and count 4 units to the right. (positive)

Beginning at 4 count 7 units to the right.

Which counting number did you reach?

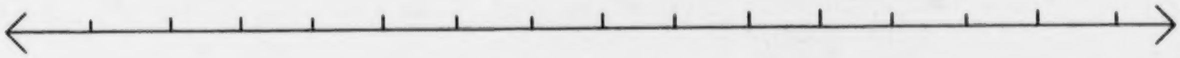
Exercises

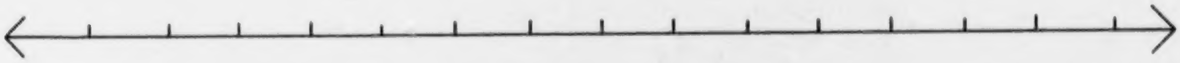
Make number lines for the following problems:

1. 8 + 3 2. 7 + 2 + 4 3. 1 + 7 + 3

4. 5 + 1 + 3 5. 8 + 1 + 3 + 2 6. 6 + 1 + 1 + 2

1.

2.


3.


4.

5.

6.

7. Mary has 5 shades of Revlon lipstick and Sue has 9 shades.

   a. Make a number line.
   b. Number 15 units from start.
   c. The two girls have how many shades in all?
   d. What counting numbers were used in this problem?
   e. What was the greatest counting number obtained?
   f. What operation was used in this problem?

8. Joe hit 2 home runs, Jim hit 3 home runs, and John hit 4 home runs.

   a. Make a number line.
   b. Number the units.
   c. How many home runs were hit altogether?
   d. What counting numbers were used in this problem?
   e. What was the greatest counting number obtained?
   f. What operation was used in this problem?

9. During library reading period, Mary read 22 pages, Jane read 11 pages, and Joe read 16 pages.

   a. Make a number line.
   b. Can you find another idea (or number) to use in place of the word "start"?
   c. How many pages were read by Mary, Jane and Joe?
   d. Perform the operation using the number line.
   e. What was the greatest counting number obtained?

10. John has 5 nickels, Jim 3 nickels, Al 1 nickel and Bob 2 nickels.

    a. Make a number line.
    b. Number the units.
    c. How many nickels do all the boys have?
    d. What counting numbers were used in this problem?
    e. What was the greatest counting number obtained?
    f. What operation was used in this problem?

GOODIES

Magic Squares: A magic square is a square which is divided into a number of smaller squares called cells. By following a few simple rules, consecutive counting number may be placed in these cells so that the sum of each row, column, and diagonal is the same.

Magic squares with an odd number of cells:

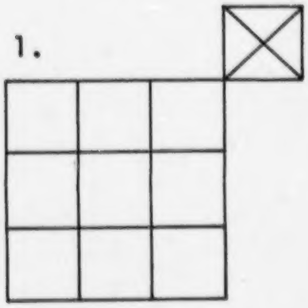
1. Begin by placing any counting number in the center cell of top row.
2. Proceed diagonally upward to the right.
3. If you stop outside the large square, go to the bottom cell in that column or the extreme left cell in that row.
4. If you stop in a full cell, go back to the last number and place the next number in the empty cell below.
5. Small cell at top right with X should be treated as full cell.

Examble:

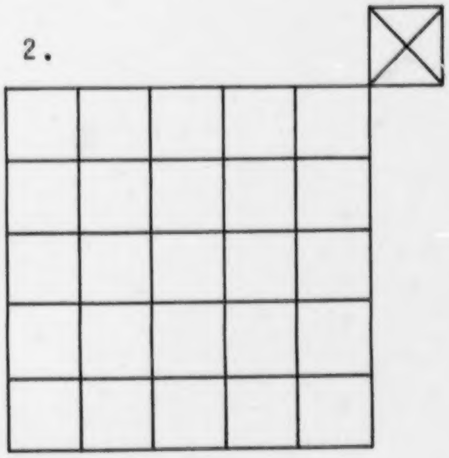
			☒
8	1	6	
3	5	7	
4	9	2	

Exercises

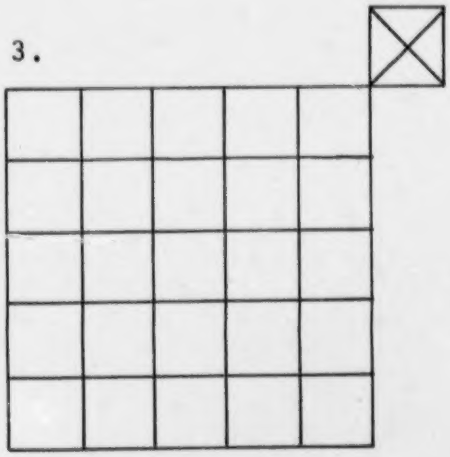
1.



2.



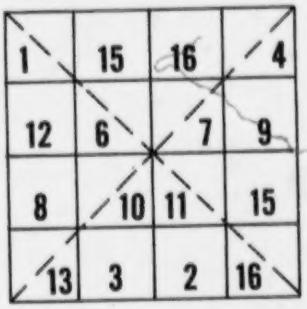
3.



Magic squares with an even number of cells:

1. Begin by drawing in the diagonals.
2. Start in top left corner and count consecutively placing only the numbers that fall in cells through which a diagonal passes..
3. Put the first consecutive number not written in the next to the last cell and count back to the beginning placing numbers in the empty cells.

Example:



1	15	16	4
12	6	7	9
8	10	11	15
13	3	2	16

Exercises

1.

2.

3.

4.

C. Closure Property for Addition

Exercises

1. $\boxed{\begin{array}{c}X\ X\\X\ X\ X\end{array}}$ How many X's do you see in the box? ____________

2. $\boxed{\begin{array}{c}X\ X\\X\ X\end{array}}$ How many X's are in this box? ____________

3. How many X's are in both boxes? ____________

4. Is your answer a counting number? ____________

5. a. How many girls are in this class? ____________

   b. How many boys are in this class? ____________

   c. How many students are in this class? ____________

6. What type of number is answer "c"? ____________

7. Add the following:

22	33	8	162	142
15	12	13	221	97

8. Can you give an example of adding two counting numbers, where your answer is not a counting number?

9. If you add any two counting numbers, what type of number is your answer?

10. Add:

7	12	13	14	51	32
9	41	8	7	6	42

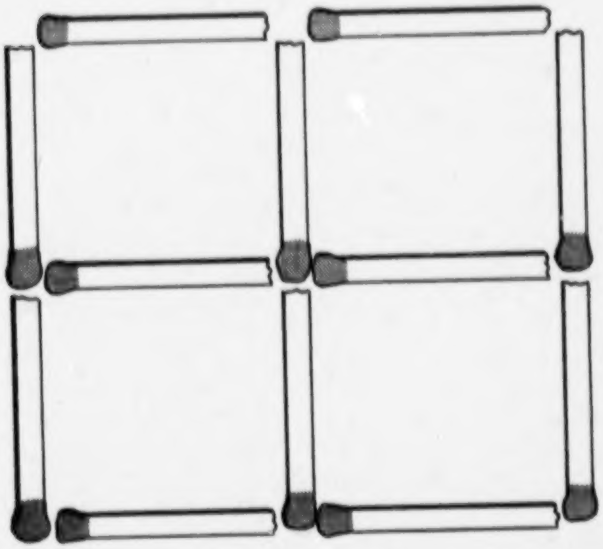
Note: Another way of stating problem 9 is to say the set of counting numbers is closed under the operation of addition.

Practical Application

Use the chart on the following page to find the number of seeds needed.

Crops to be planted	Distance between rows	Distance between plants	No. of seeds per acre	No. of acres	Total number of seeds
Cotton	30"	4"	________	100	________
Corn	30"	24"	________	56	________
Watermelons	42"	50"	________	25	________
Soybeans	30"	2"	________	150	________
Cantaloupes	36"	36"	________	12	________
Potatoes	30"	4"	________	5	________

Did you strike out?



In the arrangement of matches at the left, there are four small squares and one large square, making five squares in all. Can you change the position of three matches to reduce the number of squares to three?

Plant Population Per Acre At Various Row and Hill Spacings

One Plant Per Hill

Row Width

Spacing In Row	30"	32"	34"	36"	38"	40"	42"
2"	104,538	98,002	92,238	87,114	82,529	78,420	74,670
4"	52,269	49,001	46,119	43,557	41,264	39,201	37,335
6"	34,846	32,667	30,746	29,038	27,510	26,134	24,890
8"	26,134	24,501	23,060	21,778	20,632	19,600	18,667
10"	20,908	19,600	18,448	17,423	16,506	15,680	14,934
12"	17,423	16,334	15,373	14,519	13,755	13,067	12,445
14"	14,934	14,000	13,177	12,445	11,790	11,200	10,667
16"	13,067	12,250	11,530	10,889	10,316	9,800	99,334
18"	11,615	10,889	10,249	9,679	9,170	8,711	8,297
20"	10,454	9,800	9,224	8,711	8,253	7,840	7,467
22"	9,503	8,909	8,385	7,919	7,503	7,127	6,788
24"	8,711	8,167	7,687	7,259	6,877	6,533	6,222
26"	8,041	7,539	7,095	6,701	6,372	6,031	5,744
28"	7,467	7,000	6,588	6,222	5,895	5,600	5,334
30"	6,969	6,533	6,149	5,808	5,502	5,227	4,978
32"	6,534	6,125	5,765	5,445	5,158	4,900	4,667
34"	6,149	5,765	5,426	5,124	4,855	6,449	4,392
36"	5,808	5,445	5,125	4,840	4,585	4,356	4,149
38"	5,502	5,158	4,855	4,585	4,344	4,126	3,930
40"	5,227	4,900	4,612	4,356	4,126	3,920	3,733
42"	4,978	4,667	4,392	4,148	3,930	3,733	3,536
44"	4,752	4,455	4,193	3,960	3,751	3,564	3,394
46"	4,545	4,261	4,010	3,788	3,588	3,409	3,247
50"	4,182	3,920	3,690	3,485	3,301	3,136	2,987
54"	3,872	3,630	3,416	3,226	3,057	2,904	2,766
58"	3,605	3,379	3,181	3,004	2,846	2,704	2,575
62"	3,372	3,161	2,975	2,810	2,662	2,529	2,409
66"	3,168	2,970	2,795	2,640	2,500	2,376	2,263
70"	2,987	2,800	2,635	2,489	2,358	2,258	2,133
74"	2,825	2,649	2,493	2,354	2,231	2,119	2,018
76"	2,751	2,579	2,427	2,292	2,172	2,063	1,965
78"	2,680	2,513	2,365	2,234	2,116	2,010	1,915
80"	2,613	2,450	2,306	2,178	2,063	1,960	1,867

D. Commutative Property for Addition

Exercises

1.	$\begin{array}{r}17\\ \underline{36}\end{array}$	$\begin{array}{r}36\\ \underline{17}\end{array}$	Observe your results.
2.	$\begin{array}{r}8\\ \underline{15}\end{array}$	$\begin{array}{r}15\\ \underline{8}\end{array}$	What seems to be true of the results?
3.	$\begin{array}{r}29\\ 45\\ 37\\ \underline{13}\end{array}$	$\begin{array}{r}13\\ 37\\ 45\\ \underline{29}\end{array}$	Check your results and compare.

4. Could you find another arrangement of the numbers in the last problem that will give the same results?

5. Tommy has 15 rock-and-roll records, Joe has 12, and Bill has 2.
   a. What is the total number of records? ________________
   b. Could the order be rearranged? ________________
   c. How many different ways? ________________
   d. List these ways. ________________________________

6. Johnny pushes his grocery cart to the checkout stand and unloads the groceries onto the counter. Does the clerk have to check his items in the order in which they are placed on the counter? Why?

7. Check the groceries on the following page and compare tapes and totals with other members of the class.

Note: Since numbers can be added in any order with the same results being obtained, addition then is said to be commutative.

Purnell's Pride U.S. Inspected Grade 'A'

FRYERS Cut Up, Lb. 37c Whole Lb. **31c**

JOY
LIQUID
GIANT SIZE 22-oz. bottle **45c**

Wagner
ORANGE DRINK
Quart **25c**

YOUNG TENDER
Yellow Squash lb. **19c**

CALIFORNIA
STRAWBERRIES
qt. **89c**

Coca Cola, Pepsi, Dr. Pepper
Qt. Drinks 3 for 89c

BETTY CROCKER
Cake Mix WITH OUR COUPON OFFER **3** 1-lb. 2-oz. pkgs. **79c**

E. Identity Element for Addition

Exercises

1. How many times does the letter "p" appear in the word "apple"? ____________________

2. How many times does the letter "p" appear in the word "grape"? ____________________

3. How many times does the letter "P" appear in the word "banana"? ____________________

4. Can you write a symbol for the answer in exercise 3?

5. Give this symbol a name? ____________________

6. Is this newly named number a counting number?

   ____

7. In addition, the number zero has a special property. 5 + 0 = 5, 7 + 0 = 7, 0 + 21 = 21. Since zero is "special" in addition, we call it the identity element for ______________ .

8. Add:

   a. $\begin{array}{r}330\\ \underline{207}\end{array}$ b. $\begin{array}{r}40\\ 607\\ \underline{90}\end{array}$ c. $\begin{array}{r}43\\ 9\\ 10\\ 8\\ \underline{30}\end{array}$

   d. 7 + 8 + 10 + 12 + 20 + 17 =

   e. 13 + 30 + 27 + 14 + 26 =

9. a. What purpose does the zero serve in each numeral of problem 8? ____________________

   b. Zero is the ____________ element for addition and also a place holder in numerals.

NOTE: The identity element for addition is a number that can be added to any given number and the sum is that given number.

---

10. The following items were bought for Mrs. Smith's new kitchen:

Teflon griddle	$1.88
Storage set	1.33
Electric can opener	7.77
Dish drainer	1.14
6 Tumblers	1.05
Total	

The clerk was given $20.00.
What change should be returned? ______________

11. The following supplies and food freezer were purchased by Mrs. Smith:

Home freezer	$198.88
Plastic freezer bags	.88
1 roll freezer paper	1.28
1 package plastic containers	.87
1 roll tape	.90
Total Purchase	

Is the cost more or less than $210? __________

How much more or how much less? ______________

12. Mr. Russell purchased the following extras for his car:

Mirror muff	$ .39
Letter basket	1.41
Auto Compass	3.33
Fender flaps	1.55
Dash fence	.29
Seat belt retractor	1.59
Total Cost	

Change from $10.00 bill ______________________

1. A purchase amounted to $7.56.
The clerk was given a ten dollar bill.

Count the change as the clerk would count it out to the customer. Begin with $7.56 and count 7.57, 7.58, 7.59, etc.

2. A purchase amounted to $3.24.
The clerk was given a five dollar bill.

Count the change.

3. A purchase amounted to $.32.
The clerk was given a half-dollar.

Count the change.

4. A purchase amounted to $12.21.
The clerk was given a twenty dollar bill.

Count the change.

5. A purchase amounted to $34.75.
The clerk was given a fifty dollar bill.

Count the change.

Calculator Practice

Add:

1. 91.35
34.11
22.33
883.22
11.99
90.46
34.94
14.64
82.55

2. 45.234
45.459
65.365
975.098
3.967
.214
90.666
6.890
8.543

3. 47.09
78.09
9304.33
675.43
3456.23
34.87
9098.67
23.23
3757.09

4. 987,564.98
475,667.98
388,641.53
49,586.90
98,876.98

5. 3.987
765.987
28.984
2,736.958
37,465.987

6. 3.9
37.4
87.9
364.9
364.3

7. 4758
3746
4657
0987
8765
7654
9876
3985

8. 4758
3645
9087
5432
8765
5432
3245
7865

9. 378,542
3,986
7
346
2,976
38,675
2,987
23

Practical Application

Dr. Pepper
GOOD FOR LIFE

10
2
Dr Pepper
4

You have gone to work as a route salesman for Dr. Pepper Bottling Company. During the first day you drove a truck that carried 194 cases of drinks. You made only four trips to the plant that day.

Number of cases checked out:					Full cases brought back at the end of day.
Dr. Pepper	18	18	18	10	3
Cartons:	17	5	10	7	7
K.S.D.P.	18	18	15	17	2
K.S.D.P. Ctns.	17	4	11	18	9
Dietetic:	18	7	9	11	11
Cartons:	17	9	16	7	12
Soda:	18	15	12	5	6
Nugrape:	18	14	16	4	2
Sun Drop:	18	15	13	9	1
Tin Cans:	17	10	15	12	3
Glass Cans:	18	3	8	6	4

Using the above information fill in your daily sales report on the following page. Get the price per case from your local dealer and compute the extensions.

Be sure to find the

a. total cases you checked out of each type drink.

b. total cases you checked out of all drinks on all four trips.

c. total full cases you brought back.

d. net cases sold of each type drink.

e. total of the net cases sold of all drinks.

DAILY SALES REPORT

SALESMAN____________________________ DATE______________19___

	BRT. FOR'D	CASES OUT	CASES OUT	CASES OUT	CASES OUT	CASES OUT	TOTAL CASES OUT	FULL CASES BACK	NET CASES SOLD	PRICE		AMOUNT	
DR. PEPPER													
CARTONS													
K. S. D. P.													
K. S. D. P. Ctns.													
DIETETIC													
CARTONS													
SODA													
NuGRAPE													
SUN DROP													
TIN CANS													
GLASS CANS													
EMPTIES RETURNED													
BOTTLES													
SHELLS													
									TOTAL NET SALES				

UNIT IV

WHOLE NUMBERS

A. Investigation of Whole Numbers

1. How many digits are in the number '238'? ______________

   What does the digit 2 mean? ______________ The digit 3? ______________ The digit 8? ______________

2. Another name for the number 45,653 is (40,000 to 5,000 + 600 + 50 + 3). There are ___?___ sets of:

   ______________ ten thousands ______________ hundreds

   ______________ thousands ______________ tens

   ______________ ones

   This number written in expanded notation is 4 (10,000) + 5 (1,000) + 6 (100) + 5 (10) + 3.

3. 33,333 = 3(10,000) + 3(1,000) + 3(100) + 3(10) + 3

   Written in multiples of 10 this number is equal to 3(10 x 10 x 10 x 10) + 3(10 x 10 x 10) + 3(10 x 10) + 3(10) + 3

   How does each group compare with the group to its right?

   ______________.

NOTE: 100 can be written as 10 x 10 but it also can be written 102. The small 2 placed to the upper right of a numeral is called an exponent. An exponent tells us how many times a number is used as a factor.

The number above can also be written with exponents as:

$3(10^4) + 3(10^3) + 3(10^2) + 3(10^1) + 3(10^0)$

Our number system is based on the number we know as "ten" and is called the decimal number system.

Exercises

Write the following numbers:

1. 564 Using multiples of 10 ____________________

   Using exponents ____________________

2. 7,032 Using multiples of 10 ____________________

   Using exponents ____________________

3. 230,156 Using multiples of 10 ____________________

   Using exponents ____________________

Acrostic

There are twenty mathematical terms in this puzzle. There are no extra letters; they may be upside down or diagonal; but they are in order. Circle them and list them.

			E	S	R	E	V	N	I		
N	U	L	L			D					
		M	U	L	T	I	P	L	Y		
I	I	S	R			V			T		R
I	N		Q			I			I	O	E
E	F	T		U		D			T		B
S	I	L	E		A	E		A	N		M
B	N		O	G		R	L	D	E	E	U
U	I			W	E	U	E	D	D	S	N
S	T				C	R			I	R	
	E			L	W	H	O	L	E	E	
			A				A		I	V	
		C	L	O	S	E	D	R		N	
		S	U	B	T	R	A	C	T	I	E

Cross Number Puzzle

▨	1	2	3	▨	4	5	6	▨
7				▨	8			9
10		▨	11	12		▨	13	
14		15		▨	16	17		
▨	▨	18	▨	▨	▨	19	▨	▨
20	21		22	▨	23		24	25
26		▨	27	28		▨	29	
30		31		▨	32	33		
▨	34			▨	35			▨

Across

1. Twice fifty-six
4. CXXXII
7. Half of 3864
8. Half of 12,012
10. No. of years in decade
11. No. of pounds in one-tenth of a ton
13. No. of letters in alphabet
14. A dozen more than a thousand
16. III, IV, V, VI
18. No. of elements in a null set
19. 0 ÷ 5
20. MDCCIX
23. 1027 times two
26. 5 x 2 + 4 - 2 + 9
27. Ninety tens
29. 2 score plus 4
30. MDCCXCIX
32. 4 to 1 backwards
34. 33 x 30 + 9
35. CCII

Down

1. MCM
2. Lucky (or unlucky?) number
3. MMCCXXII
4. MDCIII
5. $5^2 + 5$
6. 45^2
7. CXI
9. DCLXVI
12. Cipher
15. No. of years in a century
17. No. which refers to high society
20. 11^2
21. 3046 plus 5133
22. One less than ten thousand
23. Twice MVI
24. 9,8,7,6,___,___,___,___,1
25. $21^2 + 3$
28. 8 times 0
31. $10^2 - 1$
33. Half of forty

B. Associative Property of Addition

Example:

The result of 5 + 7 is 12. If we then add 9, the final result is 21. The result of 7 + 9 is 16. If we then add the result to 5, the final result is 21. These combinations can be written as follows using parentheses:

$$(5 + 7) + 9 = 21$$

$$5 + (7 + 9) = 21$$

Exercises

In the following exercises see if the associative property holds true:

1. a. (18 + 39) + 27 =

   b. 18 + (39 + 27) =

2. a. (276 + 345) + 467 =

   b. 276 + (345 + 467) =

3. a. 3208 + (1609 + 876) =

   b. (3208 + 1609) + 876 =

4. Use 13, 45 and 32 and give an example of the associative property.

   a. ______________________________

   b. ______________________________

A Cardless Card Trick

Ask someone to think of any card in the deck giving the value of 11 to a Jack, 12 to a Queen, 13 to a King, and 1 to an Ace; add the number of the card next higher in sequence. (If he's thinking of a King, add 14.) Multiply the result by 5. Add the value of the suit (clubs 6, diamonds 7, hearts 8, spades 9) to his total; ask for this result. Mentally deduct 5, and tell him the card he thought of. The last number shows you the suit and the rest tells the number of the card.

C. Closure Property for Multiplication

Exercises

1. What is the result in each of the following problems?
    - a. 4 x 8 x 6 =
    - b. 144 x 12 =
    - c. 1,859 x 76 x 54 =
    - d. 7 x 9 x 8 =
    - e. 34 x 746 x 2,100 =
    - f. 39 x 1 =
    - g. 49 x 94 =
    - h. 9,876,432 x 32,587 =

2. What kind of number is each answer above?

3. Is there any case of multiplying whole numbers in which the product is not a whole number?

4. Multiply manually and then check on the machine.
    - a. 7 x 9 =
    - b. 8 x 12 =
    - c. 17 x 4 =
    - d. 18 x 21 =
    - e. 64 x 83 =
    - f. 79 x 81 =
    - g. 83 x 126 =
    - h. 764 x 34 =
    - i. 273 x 142 =
    - j. 69 x 4,782 =

NOTE: The product of two or more whole numbers is a whole number. Therefore, the whole numbers are closed under multiplication.

Calculator Practice

Multiply:

	a.	b.	c.	d.
1.	4,038 56	8,492 354	9,765 253	344 90
2.	4,657 82	8,762 752	48,027 9,084	5,862 906
3.	8,375 45	654 57	98,762 75,243	47,624 9,073
4.	524,903 35	759,372 21		75,903,613 243
5.	81,065,432 36,789		8,196,432 65,432	63,826 432
6.	890 46	8,476 374	5,762 7,364	462 75
7.	87,302 3,628	729,137 ,087		8,931,876 87,907

D. Commutative Property of Multiplication

Example:

23
x15

15
x23

What do you observe to be alike in these problems?

What do you observe about these problems that is not the same?

Is order important in multiplication?

Exercises

1. 37
x96

Can you write the answer to this problem without computing?

96
x37

2. 58
x72

72
x58

3. 246
x183

183
x246

4. a. (78 x 43) x 64 =

b. 64 x (78 x 43) =
Write this answer without computing.

c. What principle of multiplication works here?

"Smart Work"

Arrange the numbers 1,2,3, and 4 in the 4 x 4 square so that the sum of each row, column and diagonal will be 10.

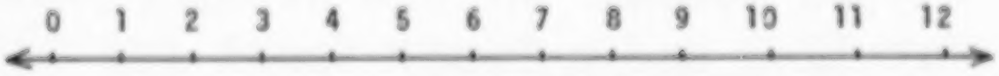
Calculator Practice

Multiply:

1.	a. 324 25	b. 632 56	c. 843 72	d. 985 43
2.	a. 3738 37	b. 5340 54	c. 54 5340	d. 2454 62
3.	a. 1227 324	b. 14,724 654	c. 57,138 257	d. 257 57,138
4.	a. 49,083 985	b. 34,578 787	c. 82,559 389	
5.	a. 52,000 309	b. 15,476 137	c. 71,389 908	
6.	a. 28,113 1,843	b. 38,564 1,419	c. 42,153 6,192	d. 34,215 7,281

E. Subtraction on the Number Line

Example:



Jim has 5 candy bars and he gave his girl fried two of the candy bars.

a. Begin at 0, count 5 units to the right (positive direction).
b. Then count 2 units in the opposite direction (negative direction).
c. You stop on the whole number 3.

Exercises

1. Make a number line for the following problems:

   a. 8-5   b. 10-4   c. 7-2

   d. What whole numbers were used?
   e. What whole number was reached?
   f. What operation was performed?

2. Doyne weighed 189 lbs. He decided to go on a diet and lost 15 lbs..

   a. What did he weigh after dieting?
   b. What kind of number is this?

3. Joe went to Al's Cycle Shop to buy a used Honda. Al had a Super Hawk for $240 and a Super Sport for $350.

   a. How much would Joe save if he bought the Super Hawk?
   b. What kind of number is this?

4. NUMBER PUZZLE

a	b	▨	c	d	e
f		g	▨	h	
i	▨	j	k		▨
▨	l		▨	m	n
o			p	▨	q
r		▨	s	t	

ACROSS

a. 31-7
c. 861-479
f. 1246-463
h. 314-288
i. 53-47
j. 2314-1979
l. 85-36
m. 111-39
o. 43,782-37,495
q. 991-986
r. 19-2
s. 2518-1826

DOWN

a. 543-267
b. 83-35
c. 31-28
d. 17,383-9,126

DOWN (continued)

e. 777-751
g. 9641-6243
k. 891-888
l. 654-227
n. 1469-1217
o. 923-862
p. 79-3
t. 88,881-88,87?

Calculator Practice

Subtract:

1. 84,362
76,879

2. 98,634
82,786

3. 64,389
24,418

4. 18,888
9,999

5. 46,564
22,863

6. 34,685
24,342

7. 18,631
2,192

8. 62,453
1,798

9. 91,435
68,720

10. 23,149
6,751

11. 19,345
6,820

12. 78,325
64,109

13. 39,154
26,307

14. 58,416
32,790

15. 81,084
79,325

16. 98,134
76,520

17. 89,315
20,647

18. 73,981
45,720

Little Goodie

1. Write the year of your birth.
2. Write the year when an important event occurred in your life.
3. Write the number of years since the important event occurred.
4. Write your age this year.
5. Add the four figures.

F. Distributive Property

Exercises

1. By use of separate number lines show the result of each:

   a. 2 x (5 + 3)

   b. (2 x 5) + (2 x 3)

   c. 3 x (4 + 2)

   d. 3 + (4 x 2)

   e. (3 + 4) x (3 + 2)

2. Place in the geometrical symbol the correct sign or numeral:

   a. 6 x 32 = 6 x (30+ △)

   b. 8 x 47 = 8 x (□ + 7)

   c. 9 x 25 = □ x (20 + 5)

   d. 6 x 73 = 6 △ (70 + 3)

   e. 8 x 64 = 8 ◇ (60 △ 4)

3. Give an expression on the right that equals the one given on the left. (Do not compute.)

a. $3\ (13 + 28) =$

b. $(6 \cdot 7) + (6 \cdot 9) =$

c. $(24 + 18 + 31)9 =$

d. $(37 \cdot 18) + (13 \cdot 18) =$

4. Find the results:

a. $6(815 + 346) =$

b. $(86 + 35)3 =$

c. $(7 \cdot 231) + (7 \cdot 154) =$

5. By use of the distributive principle multiply:

a. $$\begin{array}{r} 68 \\ \underline{\text{X}\ \ 9} \\ 72 \\ \underline{540} \end{array}$$

b. $$\begin{array}{r} 57 \\ \underline{\text{X}\ \ 7} \end{array}$$

c. $$\begin{array}{r} 325 \\ \underline{\text{X}\ \ \ \ 4} \end{array}$$

d. $$\begin{array}{r} 4061 \\ \underline{\text{X}\ \ \ \ \ 3} \end{array}$$

e. $$\begin{array}{r} 562 \\ \underline{\text{X}\ 13} \end{array}$$

G. Prime Numbers

Exercises

1. A number is circled below if its only factors are 1 and the number itself. These are "special" numbers. Circle all "special" numbers in this list.

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
48 49 50 51 52 53 54 55 56 57 58 59 60 61 62
63 64 65 66 67 68 69 70 71 72 73 74 75 76 77
78 79 80 81 82 83 84 85 86 87 88 89 90 91 92
93 94 95 96 97 98 99 100

2. There are ________ "special" numbers.

3. The first special number is ________ .

4. The numbers 71 and 73 are pairs of "special" numbers. The First pair of special numbers is ________ and ________ .

5. The last special number in this list is ________ .

6. The even special number is ________ .

7. What is the first counting number that is not special? ________

8. Are 6 and 8 special numbers? ____________

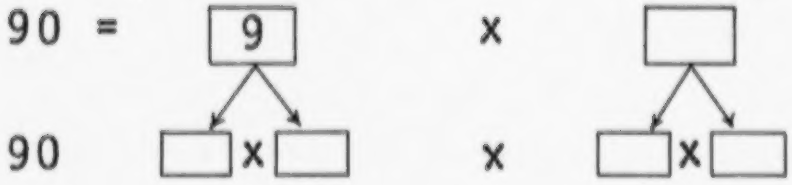
9. 2 x ____ = 6

10. 2 x ____ x ____ = 8

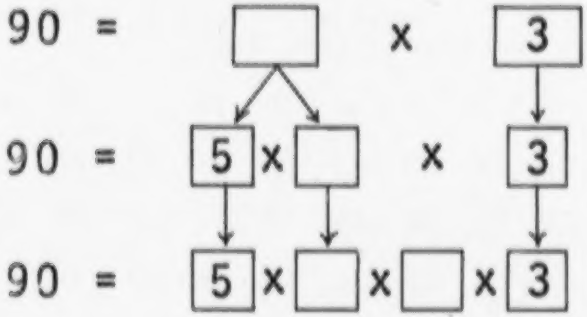
11. The special factors of 10 are ____ and __________ .

NOTE: The "special" numbers in the above exercises are called prime numbers. A prime number is a counting number, other than one, with exactly two factors.

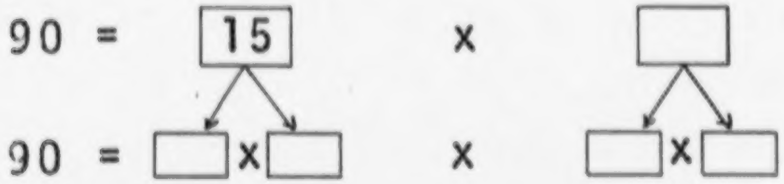
12.



13.


90 =
x
3
90 =
5
x
x
3
90 =
5
x
x
x
3

14.


90 =
15
x
90 =
x
x
x

15. Using short division

$$\begin{array}{r|l} 2 & 90 \\ \hline 5 & 45 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline \end{array}$$

$90 = 2 \times \boxed{} \times \boxed{} \times \boxed{}$

16. Are there other factors of 90 that will give the same prime factors?

17. How many sets of prime factors has 90?

18. How many sets of prime factors does any counting number have?

19. Does the order of multiplying the primes change the product?

20. Make these into factor trees as was done in problem 14.

a. 18 =

b. 72 =

21. What was done here?

$$\begin{array}{r|l} 2 & 60 \\ \hline 2 & 30 \\ \hline 5 & 15 \\ \hline & 3 \end{array}$$

22. Can you finish this one?

$$\begin{array}{r|l} 2 & 108 \\ \hline \end{array}$$

23. Express each number as a product of primes:

a. 153 =

b. 275 =

c. 1890 =

H. Prime Factors

Exercises

Number	Prime Factors	Pairs of factors
1. 60	2 x 2 x 3 x 5	1 x 60
2. 60	○ x (2 x 3 x 5)	2 x 30
3. 60	3 x (2 x 2 x ○)	○ x 20
4. 60	(○ x ○) x (3 x 5)	4 x ○
5. 60	5 x (○ x ○ x 3)	5 x 12
6. 60	(2 x 3) x (2 x 5)	○ x ○
7. 108	○ x ○ x ○ x ○ x	○ x108
8. 108	2 x (○ x ○ x ○ x ○)	2 x ○
9. 108	(○ x ○) x (3 x 3 x 3)	○ x ○
10. 108	x (○ x ○ x 3 x 3)	○ x 36
11. 108	(3 x 2) x (○ x ○ x ○)	○ x ○
12. 108	(○ x ○ x ○) x (3 x 3)	○ x 9

A short way to write $2 \times 2 = 4$ is $2^2 = 4$.

13. A short way to write $3 \times 3 = 9$ is $3^{\square} = 9$.

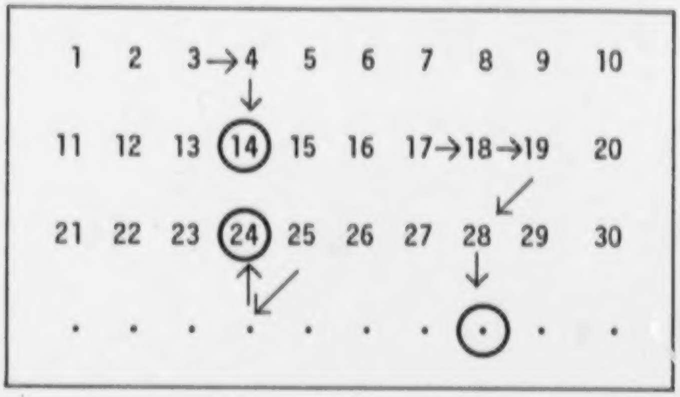
14. $2 \times 2 \times 2 = 8$, $2^{\square} = 8$.

15. $3 \times 3 \times 3 = \square$, $3^{\square} = 27$.

16. Can you show other examples of the renaming of such products?

THINK BEFORE YOU ACT!---

Examples: a. 3 → ↓ = 14 b. 25 ↙ ↑ = 24 c. 17 → → ↙ ↓ = 38


1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30

Using the vector chart, solve each problem below. Can you do this without any help?

1. 6 → → = $\square$

2. 35 ← ↓ ↓ = $\square$

3. 14 ← ↑ = $\square$

4. 5 → ← ↑ ↓ = $\square$

5. 18 ↗ = $\square$

6. 10 ↙ = $\square$

7. 16 → ↘ ↗ = $\square$

8. 47 ↘ ↗ ↘ ← ← = $\square$

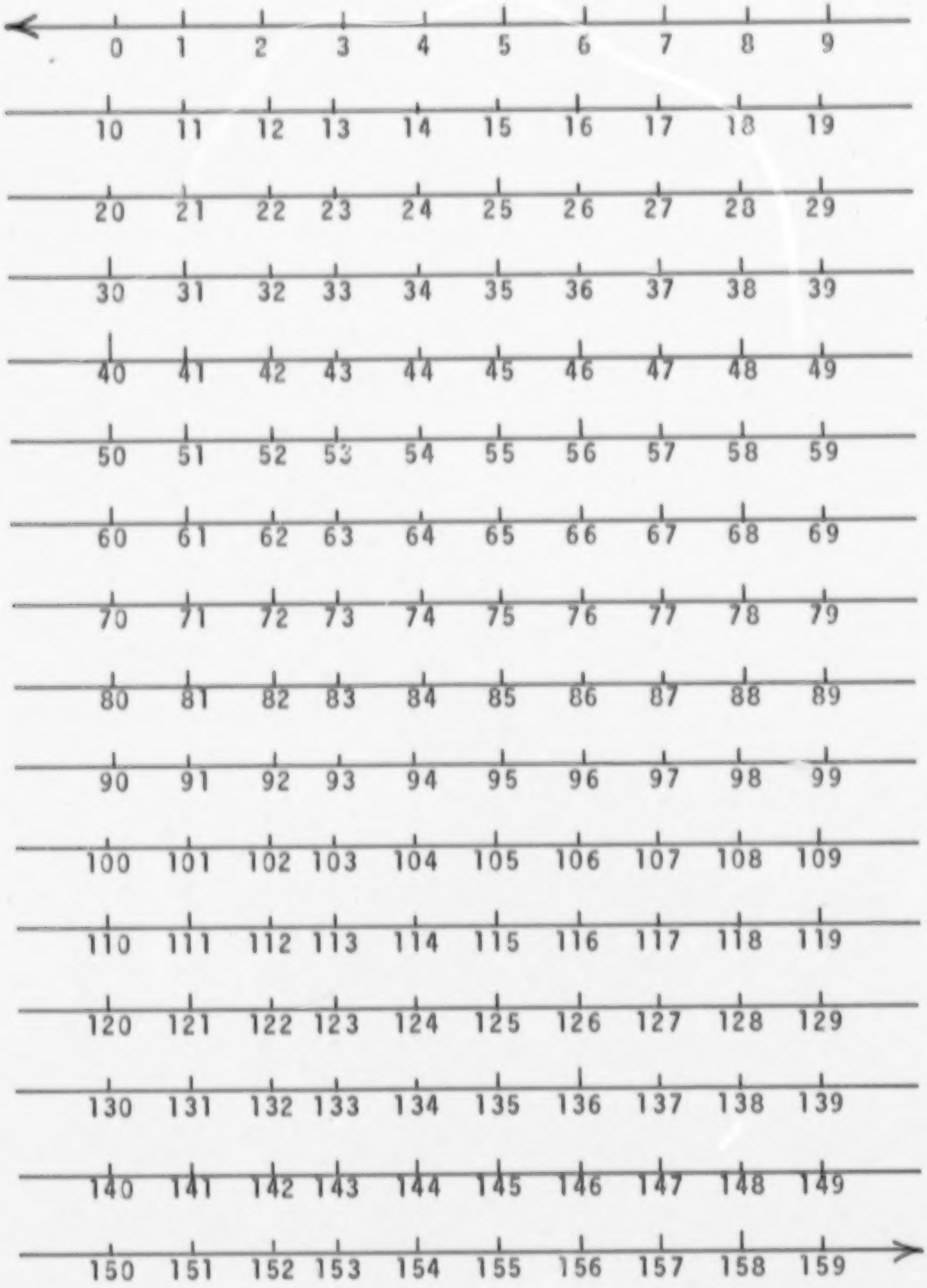
9. $\square$ → → ↓ ↓ = 44

10. 1 ← ↓ ↑ ↙ ↗ = $\square$

11. 20 ↖ ↙ = $\square$

12. 6 ↓ ↑ = $\square$

Vector Chart


0 1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19
20 21 22 23 24 25 26 27 28 29
30 31 32 33 34 35 36 37 38 39
40 41 42 43 44 45 46 47 48 49
50 51 52 53 54 55 56 57 58 59
60 61 62 63 64 65 66 67 68 69
70 71 72 73 74 75 76 77 78 79
80 81 82 83 84 85 86 87 88 89
90 91 92 93 94 95 96 97 98 99
100 101 102 103 104 105 106 107 108 109
110 111 112 113 114 115 116 117 118 119
120 121 122 123 124 125 126 127 128 129
130 131 132 133 134 135 136 137 138 139
140 141 142 143 144 145 146 147 148 149
150 151 152 153 154 155 156 157 158 159

I. Common Factors

Exercises

1. ☐ is the common factor of (2×7) and (7×17)

2. (5×11^2)
and
(3×11^2)
have ☐ for a common factor

3. $5 \times 7 \times 23$
and
$3 \times 7 \times 23$
have ☐ and ☐ for common factors

4. $2^2 \cdot 3 \cdot 5^2$
and
$2 \cdot 3 \cdot 5^3$
have ☐, ☐ and ☐ for common factors

5. $2^2 \cdot 7 \cdot 11^2$
and
$2^2 \cdot 7 \cdot 11$
and
$2^2 \cdot 7^2 \cdot 11$
have ☐, ☐ and ☐ for common factors

6. Write as products of primes and find the common factors.

$144 =$ ____

$188 =$

Common factors are ______________________________

J. Division of Whole Numbers

Exercises

1. 625 ÷ 25 =
2. 1728 ÷ 12 =
3. 50,481 ÷ 237 =
4. 95,953 ÷ 793 =
5. 56,561 ÷ 347 =
6. 363 ÷ 121 =
7. 627 ÷ 209 =
8. 1318 ÷ 659 =
9. 747 ÷ 83 =
10. 1036 ÷ 37 =
11. 19,400 ÷ 776 =
12. 58,368 ÷ 456 =
13. 500,973 ÷ 893 =
14. 299,552 ÷ 851 =
15. 186,660 ÷ 1,220 =
16. 9468 ÷ 12 =
17. 28,075 ÷ 25 =

18. 525 shares of a particular stock sold for $590,625. What was the price per share?

19. Mr. Jones bought 1,125 acres of land for $365,625. What was the price per acre?

20. Bobby Jones made 581 points on 7 tests. What was his average score?

21. Place the quotient in the correct square:

a. 65 ÷ 5 =

b. 72 ÷ 24 =

c. 527 ÷ 31 =

d. 102 ÷ 6 =

e. 24 ÷ 4 =

f. 784 ÷ 28 =

g. 354 ÷ 59 =

h. 70 ÷ 7 =

i. 5696 ÷ 365 =

j. 96 ÷ 8 =

k. 22,712 ÷ 5,678 =

l. 270 ÷ 15 =

m. 270 ÷ 18 =

n. 217 ÷ 31 =

o. 2277 ÷ 99 =

p. 100 ÷ 20 =

Find the sum of each row.
Find the sum of each column.
Find the sum of each diagonal.

diagonal

a	b	c	d	
e	f	g	h	
i	j	k	l	
m	n	o	p	

row

column

diagonal

There is a simple method of checking computation that works in most cases.

Step 1 Add the digits in each number until you get a one digit number. In subtraction the minuend must be larger than the subtrahend even if this means it will contain two digits.

Step 2 Work problem

Step 3 Check

Addition:

$$\begin{tikzcd}
435 & 4+3+5 \arrow[r] & 12 \arrow[r] & 1+2 \arrow[r] & 3 \arrow[dr] \\
127 & 1+2+7 \arrow[r] & 10 \arrow[r] & 1+0 \arrow[r] & 1 \arrow[r] & 3+1+7 \arrow[r] & 11 \arrow[r] & 1+1 \arrow[r] & 2 \\
\underline{295} & 2+9+5 \arrow[r] & 16 \arrow[r] & 1+6 \arrow[r] & 7 \arrow[ur] \\
857 & 8+5+7 \arrow[r] & 20 \arrow[r] & 2+0 \arrow[r] & 2
\end{tikzcd}$$

Subtraction:

$$\begin{tikzcd}
4384 & 4+3+8+4 \arrow[r] & 19 \arrow[r] & 1+9 \arrow[r] & 10 \\
\underline{1575} & 1+5+7+5 \arrow[r] & 18 \arrow[r] & 1+8 \arrow[r] & 9 \arrow[r] & 10 - 9 \arrow[r] & 1 \\
2809 & 2+8+0+9 \arrow[r] & 19 \arrow[r] & 1+9 \arrow[r] & 10 \arrow[r] & 1 + 0 \arrow[ur]
\end{tikzcd}$$

Multiplication:

$$\begin{tikzcd}
187 & 1+8+7 \arrow[r] & 16 \arrow[r] & 1+6 \arrow[r] & 7 \arrow[dr] \\
 & & & & & 7 \times 8 = 56 \arrow[r] & 5+6 \arrow[r] & 11 \arrow[r] & 1+1 \arrow[r] & 2 \\
143 & 1+4+3 \arrow[r] & 8 \arrow[r] & 8 \arrow[r] & 8 \arrow[ur] \\
561 \\
748 \\
\underline{187} \\
26{,}741 & 2+6+7+4+1 \arrow[r] & 20 \arrow[r] & 2+0 \arrow[r] & 2
\end{tikzcd}$$

Division: (Check by multiplication then add remainder)

$$\begin{array}{rr}
 & 29 \\
165 & \overline{)\,4931} \\
 & \underline{330} \\
 & 1631 \\
 & \underline{1485} \\
 & 146
\end{array}$$

$$\begin{tikzcd}
165 \arrow[r] & 1+6+5 \arrow[r] & 12 \arrow[r] & 1+2 \arrow[r] & 3 \arrow[dr] \\
29 \arrow[r] & 2+9 \arrow[r] & 11 \arrow[r] & 1+1 \arrow[r] & 2 \arrow[r] & 3 \times 2 = 6 + 2 = & 8 \\
146 \arrow[r] & 1+4+6 \arrow[r] & 11 \arrow[r] & 1+1 \arrow[r] & 2 \\
4931 \arrow[r] & 4+9+3+1 \arrow[r] & 17 \arrow[r] & 1+7 \arrow[r] & 8 \arrow[uurr]
\end{tikzcd}$$

Divisor x Quotient + Remainder gives check number 8

UNIT V
INTEGERS

A. Integers

Examples:

1. 7 - 11 = -4 2. 15 - 21 = -6

Exercises

1. 34 - 34 = ________
2. 34 - 35 = ________
3. 1,436 - 8,561 = ____________
4. 271 - 463 = ____________
5. 1,429,600 - 7,358,547 = ____________
6. 580,575 - 40,580,575 = ______________
7. 968,523 - 1,068,523 = _______________
8. 34 - 107 = ____________
9. 4,267 - 58,462 ____________
10. 59,576 - 73,856 = ____________

NOTE: The set of whole numbers and their opposites form the set of integers.

11. 48,549 - 568,452 = ____________________

12. 46,398 - 84,531 = ____________________

13. 6,341 - 8,569 = ____________________

14. 94,837,256 - 96,483,725 = ____________

15. 49 - ____________ = ¯30

16. 31 - ____________ = ¯19

17. __________ - 54 = ¯37

18. 76,542 - _________ = ¯9465

19. _________ - 76,534 = ¯13,268

20. _________ - 29 = ¯21

21. 8 - _______ = ¯1

22. 35 - _______ = ¯15

23. __________ - 22 = ¯5

24. __________ - 75 = ¯30

Figure Me Out

Give the missing numbers so that this will be a magic square.

	$\frac{9}{12}$	$\frac{4}{12}$
		$\frac{11}{12}$
$\frac{10}{12}$		$\frac{6}{12}$

B. Properties of Addition

Exercises

Are the answers to these problems found in the set of integers?

1. 543 + $^{-}543$ ____________

2. 1,742 + $^{-}2{,}342$ ________

3. 100 + 99 ______________

Work these problems with the calculator.

4. a. 5,432 + 3,780 _________

   b. 3,780 + 5,432 __________

5. a. $^{-}432$ + 358 ____________ 6. a. $^{-}1{,}540$ + $^{-}2{,}544$ _____

   b. 358 + $^{-}432$ _____________ b. $^{-}2{,}544$ + $^{-}1{,}540$ _____

Compare the answer in (a) to the answer in (b). What property is illustrated in problems 4, 5, and 6? ____________

Work these problems without using the calculator.

7. 475 + $^{-}364$ ______________

8. $^{-}364$ + 475 ______________

9. $^{-}1{,}643$ + 986 ____________

10. 986 + $^{-}1{,}643$ ____________

Work these problems using the calculator.

11. a. (345 + 562) + 792 ____________________

    b. 345 + (562 + 792) ____________________

12. a. ($^{-}1{,}184$ + 984) + 300 _______________

    b. $^{-}1{,}184$ + (984 + 300) _______________

What do you notice about the answers in problem 11? In problem 12? What property does this illustrate? ____________

Shade the squares which are not needed for this puzzle.

Across

a. 124 + $^{-}35$

c. 576 + $^{-}386$

f. 12,723 + $^{-}2,720$ + 1,175

h. 966 + $\boxed{}$ = 990

i. 3,796 + 4,732 + $^{-}7574$

k. $^{-}601$ + $^{-}537$ + $^{-}989$ + 2130

l. $^{-}196$ + $\boxed{}$ = $^{-}132$

m. 2,503 + $\boxed{-}$ = 196

p. 347 + $^{-}341$

q. $^{-}6,732$ + 6,543 + 403

r. $^{-}5,130$ + 7,598 + $^{-}2,430$

a	b		c	d	e
f		g			
h			i		j
		k		l	
m	n		o		p
q				r	

Down

a. 1,976 + $^{-}1,164$

b. 987 + $^{-}73$

c. 998 + $^{-}416$ + $^{-}403$

d. $^{-}123$ + 456 + $^{-}789$ + 10,312

e. 876 + $^{-}577$ + $^{-}299$

g. $^{-}321$ + $^{-}233$ + 555

j. $^{-}4078$ + $\boxed{}$ = 390

k. $^{-}9,643$ + $^{-}7,653$ + 17,600

m. $^{-}265$ + $\boxed{}$ $^{-}243$

n. 2,406 + $^{-}1,389$ + $^{-}986$

o. 564 + $^{-}809$ + 252

C. Additive Inverse

Example: $5 + -5 = 0$
$-5 + 5 = 0$

Exercises

Fill in the following blanks:

1. ______ + 6 = 0

2. -10 + 10 = ______

3. -3 + ______ = 0

4. -547 + ______ = 0

5. 140 + ______ = 0

6. 0 + ______ = 0

7. 0 + 0 = ______

8. In addition, the inverse of zero is ______________.

9. In addition, the inverse of -31 is ______________________.

10. In addition, the inverse of 31 is ______________________.

NOTE: If the addition of two numbers produces the additive identity element, then one number is the additive inverse of the other.

D. Division of Integers

Exercises

1. 48 ÷ 6 = Is the result an integer? ________

2. 9 ÷ 3 = Is the result an integer? ________

3. 625 ÷ 25 = Is the result an integer? ________

4. 1,246,104 ÷ 486 = Is the result an integer? ________

5. 3,386,955 ÷ 7,895 = Is the result an integer? ________

6. 5,964,959 ÷ 5,368 = Is the result an integer? ________

NOTE: From problem #6 we see the integers are not closed under division. We would like to be able to divide any two integers. Therefore, we must extend the set of integers; or, create a number which will give us the answer to the division of any two integers. (Exception: Dividing by zero)

Example: 9 ÷ 4 is not an integer. Therefore
we create the number $\frac{9}{4}$ so we can divide.
$9 \div 4 = \frac{9}{4}$

The set that includes the integers and all the "new type" numbers needed for division is called rational numbers.

Practical Application

HELPING BUILD ARKANSAS

ARKANSAS POWER & LIGHT COMPANY

NET MONTHLY RATE

Summer Rate*	Winter Rate*
$1.45 for the first 15 Kwh or less	$1.45 for the first 15 Kwh or less
3.80¢ per Kwh for the next 40 Kwh	3.80¢ per Kwh for the next 40 Kwh
2.70¢ per Kwh for the next 145 Kwh	2.70¢ per Kwh for the next 145 Kwh
1.75¢ per Kwh for the next 500 Kwh	1.75¢ per Kwh for the next 200 Kwh
1.15¢ per Kwh for all additional Kwh	1.15¢ per Kwh for the next 600 Kwh*
	0.80¢ per Kwh for all additional Kw

* Summer Rate will apply for the billing months of May through October and Winter Rate will apply for the billing months of November through April.

**Kwh billed at 1.15¢ shall be reduced to 200 when Customer has an approved electric water heater in regular use.

Electric Water Heating

Customers using an approved electric water heater will be billed 1.0¢ per Kwh for up to 400 Kwh, provided at least 200 Kwh are first billed at the above rates.

Using the above rates work these problems.

1. Find the number of Kwh used if the bill was $21.75.

____

2. How many Kwh were used if the bill was $59.75 ?

____

3. If the bill is $173.75 how many Kwh are used?

____

4. How many Kwh could you get for $200.75 ?

____

5. What is the total number of Kwh used in problems 1. and 2. ?

____

More Goodies

There are 20 mathematical terms in this puzzle. There are extra letters and words which you will not use. The words may be upside down or on a diagonal but they are in order. Circle and list them.

B	R	C	I	F	L	O	W	C	H	A	R	T	E	S	B	U	S	T
Q	W	E	R	E	I	T	Y	A	T	Y	U	U	I	O	P	A	S	D
R	E	G	E	T	N	I	F	L	G	F	H	M	L	J	K	L	F	Z
X	C	A	V	I	E	B	N	C	M	N	U	M	B	E	R	Q	P	W
O	E	I	R	N	U	D	T	U	Y	A	B	L	S	K	C	D	J	F
E	D	I	V	I	D	H	G	L	L	U	N	Z	M	A	X	N	Y	C
L	V	B	T	F	Y	R	U	A	E	I	W	O	D	Q	P	L	T	H
O	G	J	F	N	K	D	L	T	S	A	B	D	V	N	P	O	I	M
H	X	B	Z	I	Q	W	D	O	P	B	R	T	Y	I	U	I	T	O
W	A	S	U	I	N	V	B	R	S	B	D	F	T	G	H	S	N	J
A	B	C	D	E	F	G	H	I	J	Q	R	L	M	N	O	P	E	F
I	J	L	K	M	T	C	A	R	T	B	U	S	T	U	V	W	D	E
M	A	S	D	A	L	E	E	V	E	M	I	A	J	U	D	Y	I	T
M	A	R	Y	C	L	O	E	N	O	R	A	X	R	U	T	H	V	P
W	F	S	P	B	J	L	H	L	R	C	L	O	S	E	D	V	I	P

Think

A man with a five-gallon bucket and a three-gallon bucket went to a well to get exactly four gallons of water. How was he able to get the four gallons of water by using only the two buckets?

UNIT VI

RATIONAL NUMBERS

A. Multiplying Rational Numbers

Rational numbers in fractional form are multiplied by obtaining the product of the numerators and the product of the denominators.

Examples: 1. $\frac{5}{8} \times \frac{1}{4} = \frac{5 \times 1}{8 \times 4} = \frac{5}{32}$

2. $\frac{11}{3} \times \frac{28}{5} = \frac{11 \times 28}{3 \times 5} = \frac{308}{15}$

Exercises

1. a. $\frac{1}{3} \times \frac{4}{5} = \frac{1 \times 4}{3 \times 5} =$ b. $\frac{5}{6} \times \frac{5}{8} =$

c. $\frac{3}{5} \times \frac{4}{7} =$ d. $\frac{3}{7} \times \frac{21}{4} =$

e. Are all the results above rational numbers?

f. Try to think of an example in which the result is not a rational number.

g. Can we conclude that the operation of multiplication is closed under the rational numbers?

2. Multiply: a. $\frac{5}{6} \times \frac{9}{8} =$ b. $\frac{4}{5} \times \frac{4}{13} =$

c. $\frac{9}{8} \times \frac{5}{6}$ d. $\frac{4}{13} \times \frac{4}{5} =$

e. What do you notice about problems a and c, and b and d?

f. What do you think we can conclude about multiplication of rational numbers?

3. a. $\left(\frac{2}{3} \times \frac{4}{5}\right) \times \frac{5}{4} =$ b. $\frac{2}{3} \times \left(\frac{4}{5} \times \frac{5}{4}\right) =$

c. $\left(\frac{7}{2} \times \frac{3}{2}\right) \times \frac{3}{4} =$ d. $\frac{7}{2} \times \left(\frac{3}{2} \times \frac{3}{4}\right) =$

e. Compare the answers in problems a and b.

f. Compare the answers in problems c and d.

4. a. $\frac{13}{7} \times 1 = \frac{\square}{\square}$ b. $\frac{8}{9} \times 1 = \frac{\square}{\square}$ c. $\frac{7}{8} \times \frac{\square}{\square} = \frac{7}{8}$

d. $\frac{17}{15} \times \frac{\square}{\square} = \frac{17}{15}$ e. $\frac{\square}{\square} \times \frac{1}{1} = \frac{13}{14}$

f. Any number multiplied by 1 produces that same ________.
The identity for multiplication is ______________.

5. a. $\frac{4}{5} \times \frac{5}{4} = \square$ b. $\frac{2}{3} \times \frac{3}{2} = \square$ c. $\frac{17}{5} \times \frac{5}{17} = \square$

d. $\frac{7}{8} \times \frac{\square}{\square} = 1$ e. $\frac{24}{91} \times \frac{\square}{\square} = 1$ f. $\frac{\square}{\square} \times \frac{16}{17} = 1$

g. $\frac{7}{12} \times \frac{\square}{\square} = 1$ h. $\frac{8}{1} \times \frac{\square}{\square} = 1$ i. $\frac{\square}{\square} \times 9 = 1$

j. In multiplication, how do you find the inverse of a number ?______________________________

k. The multiplicative inverse of $\frac{7}{8}$ is______________.

l. The multiplicative inverse of 12 is______________.

m. The multiplicative inverse of $\frac{7}{3}$ is______________.

Exercises

Multiply:

1. $\frac{1}{3} \times 4 =$

2. $6 \times \frac{1}{8} =$

3. $\frac{5}{12} \times 5 =$

4. $9 \times \frac{1}{81} =$

5. $\frac{4}{12} \times \frac{2}{4} =$

6. $\frac{1}{2} \times \frac{1}{8} =$

7. $\frac{25}{18} \times \frac{9}{10} =$

8. $\frac{2}{5} \times \frac{1}{8} =$

9. $\frac{5}{12} \times \frac{12}{5} =$

10. $\frac{22}{7} \times \frac{16}{35} =$

11. $5 \times \frac{27}{10} =$

12. $\frac{16}{24} \times \frac{3}{4} =$

13. $48 \times \frac{1}{16} =$

14. $\frac{7}{12} \times 4 =$

15. Fill in the operation and equal signs

3		**24**		**3**	**=**	**30**
4		**2**		**4**		**2**
12		**6**		**2**		**4**
=						
24		**2**		**5**		**60**

B. Reducing Rationals Using Primes

Exercises

1. Rename these numbers:

$$\frac{5 \times 7}{3 \times 7} = \frac{5}{3} \times \frac{\square}{\square} = \frac{5}{3} \times \square = \frac{5}{3}$$

$$\frac{35}{21} = \frac{5}{3}$$

2. Find the prime factors of each numerator and each denominator.

a. $\frac{15}{25} = \frac{\square \times 5}{5 \times \square}$ b. $\frac{81}{18} = $ ____________

c. $\frac{12}{18} = \frac{2 \times \square \times \square}{\square \times 3 \times \square}$ d. $\frac{75}{21} = $ ____________

e. $\frac{39}{65} = $ ____________ f. $\frac{4620}{231} = $ ____________

3. Rename these numbers so that some of the factors will be the identity.

a. $\frac{15}{25} = \frac{\square}{\square} \times \frac{5}{5}$ b. $\frac{81}{18} =$

c. $\frac{12}{18} =$ d. $\frac{75}{21} =$

e. $\frac{39}{65} =$ f. $\frac{4620}{231} =$

4. Rename these results so that you have a fraction using the smallest numbers possible for numerator and denominator.

a. $\frac{15}{25} = \frac{3 \times 5}{5 \times 5} = \frac{3}{5} \times \frac{5}{5} = \square$ b. $\frac{81}{18} =$

c. $\frac{12}{18} =$ d. $\frac{75}{21} =$

e. $\frac{39}{65} =$ f. $\frac{4620}{231} =$

5. We can find an easy way to reduce $\frac{153}{102}$ using primes.

$$\frac{153}{102} = \frac{\square \times \square \times 17}{3 \times \square \times \square}$$

$$\frac{153}{102} = \frac{\square}{3} \times \frac{\square}{\square} \times \frac{17}{\square}$$

$$\frac{153}{102} = \frac{\square}{\square}$$

153 ÷ 102 =

6. Reduce

a. $\frac{200}{100} =$

b. $\frac{60}{54} =$

c. $\frac{150}{66} =$

d. $\frac{48}{9} =$

e. $\frac{77}{66} =$

f. $\frac{66}{77} =$

g. $\frac{14}{16} =$

h. $\frac{9}{81} =$

i. $\frac{36}{48} =$

j. $\frac{81}{648} =$

k. $\frac{3}{24} =$

l. $\frac{12}{72} =$

Practical Applications

1. An oil well is drilled in an area that has 80 acres spacing. The oil company pays a 1/8 royalty interest in the lease. This simply means that the owner or owners get one barrel out of every 8 barrels produced by this well. Mr. Young owns 20 acres of this 80 acre unit. If the well will average 40 barrels per day @ $2.60 per barrel, how much money should Mr. Young receive in royalty in a 30 day month?

2. John Doe is operating an oil well (#1-A) for Humble Oil Corp.. Materials and labor for May cost $4783.00. Partners in well #1-A are as follows:

   J. Brown - 3/32
   P. Black - 5/64
   J. Lowe - 3/8
   R. Rogers - 7/64
   C. Rogers - 1/16
   B. Franks - 3/16
   D. Young 3/32

   Bill each man for his pro-rata share of cost of operations for May.

C. Multiplying Decimals

Examples:

$$\begin{array}{r}2.34\\ \underline{5.64}\\ 13.1976\end{array} \qquad \begin{array}{r}23.4\\ \underline{5.64}\\ 131.976\end{array} \qquad \begin{array}{r}.234\\ \underline{56.4}\\ 13.1976\end{array}$$

Exercises

1. The number of digits to the right of the decimal in 13.1976 is____________.

2. Examine the following:

   $97.3 \times 0.125 = 12.1625$

   $0.0231 \times 836 = 19.3116$

   State in words a rule that will tell where the decimal point should be located.

3. If we multiply .6 X .7 we know that this is the same as multiplying the fractions $\frac{6}{10}$ X $\frac{7}{10}$. This is equal to $\frac{42}{100}$ which is the decimal .42. If instead it was .06 X .7 we would have $\frac{6}{100}$ X $\frac{7}{10}$ = $\frac{42}{1000}$; in this case our decimal value is .042.

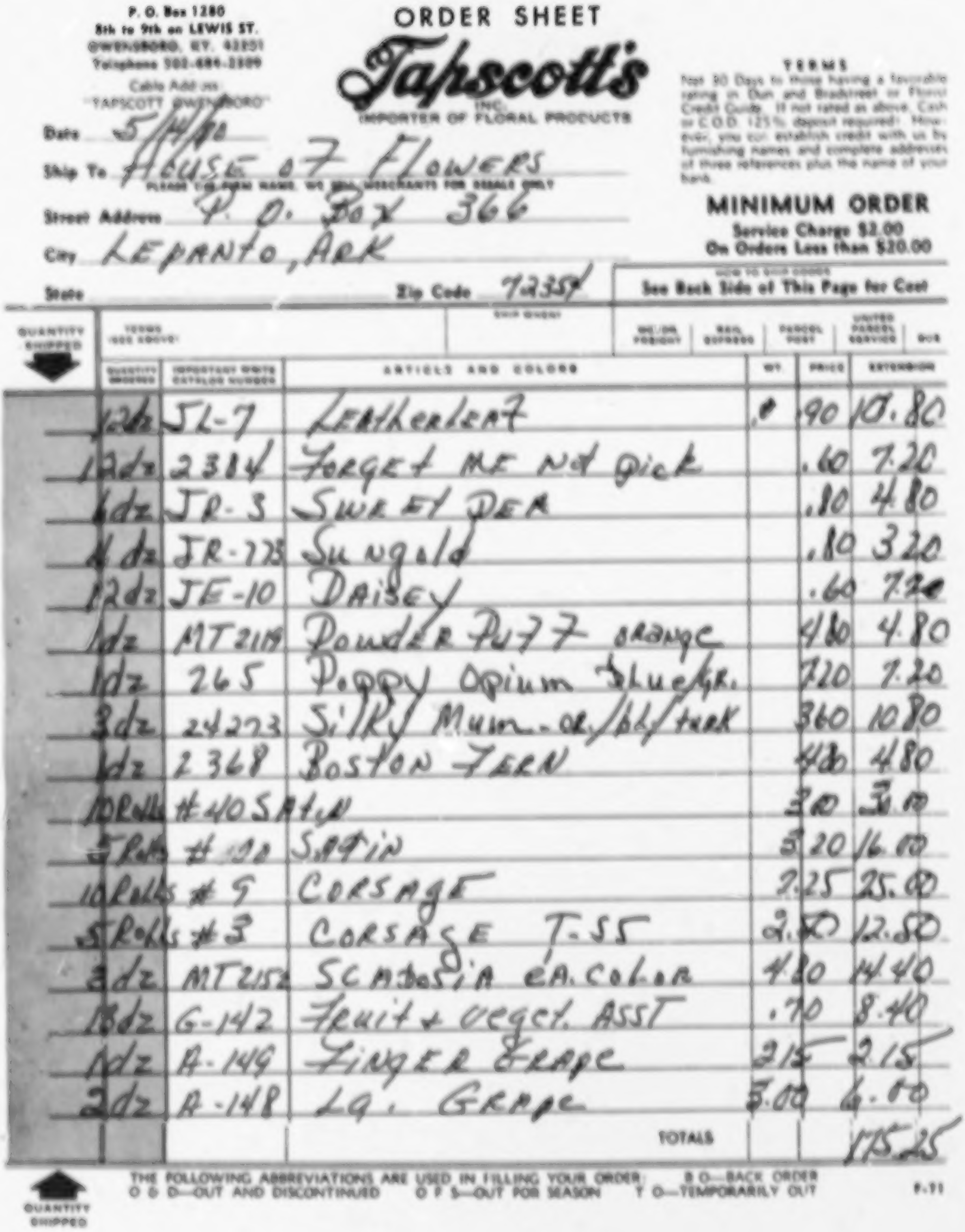
4. Place the decimal point at the proper place in each products:

   a. $\begin{array}{r}65.84\\ \underline{.45}\\ 296280\end{array}$ b. $\begin{array}{r}75.31\\ \underline{1.28}\\ 963968\end{array}$ c. $\begin{array}{r}32.14\\ \underline{2.3}\\ 73922\end{array}$ d. $\begin{array}{r}.72\\ \underline{6.6}\\ 4752\end{array}$

5. Multiply and place the decimal point correctly:

   a. $\begin{array}{r}56.28\\ \underline{.332}\end{array}$ b. $\begin{array}{r}326.7\\ \underline{4.03}\end{array}$ c. $\begin{array}{r}1.213\\ \underline{71.2}\end{array}$ d. $\begin{array}{r}72.3\\ \underline{60.0}\end{array}$

   e. $\begin{array}{r}700\\ \underline{2.35}\end{array}$ f. $\begin{array}{r}36.41\\ \underline{90.7}\end{array}$ g. $\begin{array}{r}73.67\\ \underline{21.2}\end{array}$ h. $\begin{array}{r}.202\\ \underline{.101}\end{array}$



P. O. Box 1280
8th to 9th on LEWIS ST.
OWENSBORO, KY. 42301
Telephone 502-684-2309
Cable Address
"TAPSCOTT OWENSBORO"

ORDER SHEET

Tapscott's
INC.
IMPORTER OF FLORAL PRODUCTS

TERMS
Net 30 Days to those having a favorable rating in Dun and Bradstreet or Florist Credit Guide. If not rated as above, Cash or C.O.D. (25% deposit required). However, you can establish credit with us by furnishing names and complete addresses of three references plus the name of your bank.

MINIMUM ORDER
Service Charge $2.00
On Orders Less than $20.00

Date 5/14/80
Ship To House of Flowers
PLEASE USE FIRM NAME. WE SELL MERCHANTS FOR RESALE ONLY
Street Address P. O. Box 366
City LEPANTO, ARK
State
Zip Code 72354

HOW TO SHIP GOODS
See Back Side of This Page for Cost

QUANTITY SHIPPED	TERMS (SEE ABOVE)	SHIP WHEN?	MTR./OR FREIGHT	RAIL EXPRESS	PARCEL POST	UNITED PARCEL SERVICE	BUS

QUANTITY SHIPPED	QUANTITY ORDERED	IMPORTANT WRITE CATALOG NUMBER	ARTICLES AND COLORS	WT.	PRICE	EXTENSION
	12dz	JL-7	Leatherleaf		.90	10.80
	12dz	2384	Forget me not pick		.60	7.20
	6dz	JR-3	Sweet Pea		.80	4.80
	4 dz	JR-773	Sungold		.80	3.20
	12dz	JE-10	Daisey		.60	7.20
	1dz	MT2119	Powder Puff orange		4.80	4.80
	1dz	265	Poppy Opium blue/gr.		7.20	7.20
	3dz	24273	Silky Mum - or/bl/tank		3.60	10.80
	1dz	2368	Boston Fern		4.80	4.80
	10Rolls	#40	Satin		3.10	31.00
	5Rolls	#100	Satin		3.20	16.00
	10Rolls	#9	Corsage		2.25	25.00
	5Rolls	#3	Corsage T-55		2.50	12.50
	3dz	MT2152	Scabosia ea. color		4.80	14.40
	12dz	G-142	Fruit + veget. Asst		.70	8.40
	1dz	A-149	Finger Grape		2.15	2.15
	2dz	A-148	Lg. Grape		3.00	6.00
			TOTALS			175.25

THE FOLLOWING ABBREVIATIONS ARE USED IN FILLING YOUR ORDER: B O—BACK ORDER
O & D—OUT AND DISCONTINUED O F S—OUT FOR SEASON T O—TEMPORARILY OUT

F-11

CHECK THE EXTENTIONS. MAKE ANY CORRECTION NEEDED.

Calculator Practice

Mutiply:

1.	39.34 4.7	398,571.89 4,758	395.8 47.5
2.	586.7 46,577	472.54 9.08	8.6543 7.86
3.	97.67 8.0	685.098 57.7	5,746.8 87.09
4.	47.9 .8	84,759.6 .811	867.8 .123
5.	987.765 857.96	1504,856 .87690	475,912.5 57,697.9
6.	47,589.765 .9087	69.48475 64.867	1,093.948 673.57

7. In each problem, locate the decimal in the numeral in the box.

a. $.4855 \times 3.03 = \boxed{1471065}$

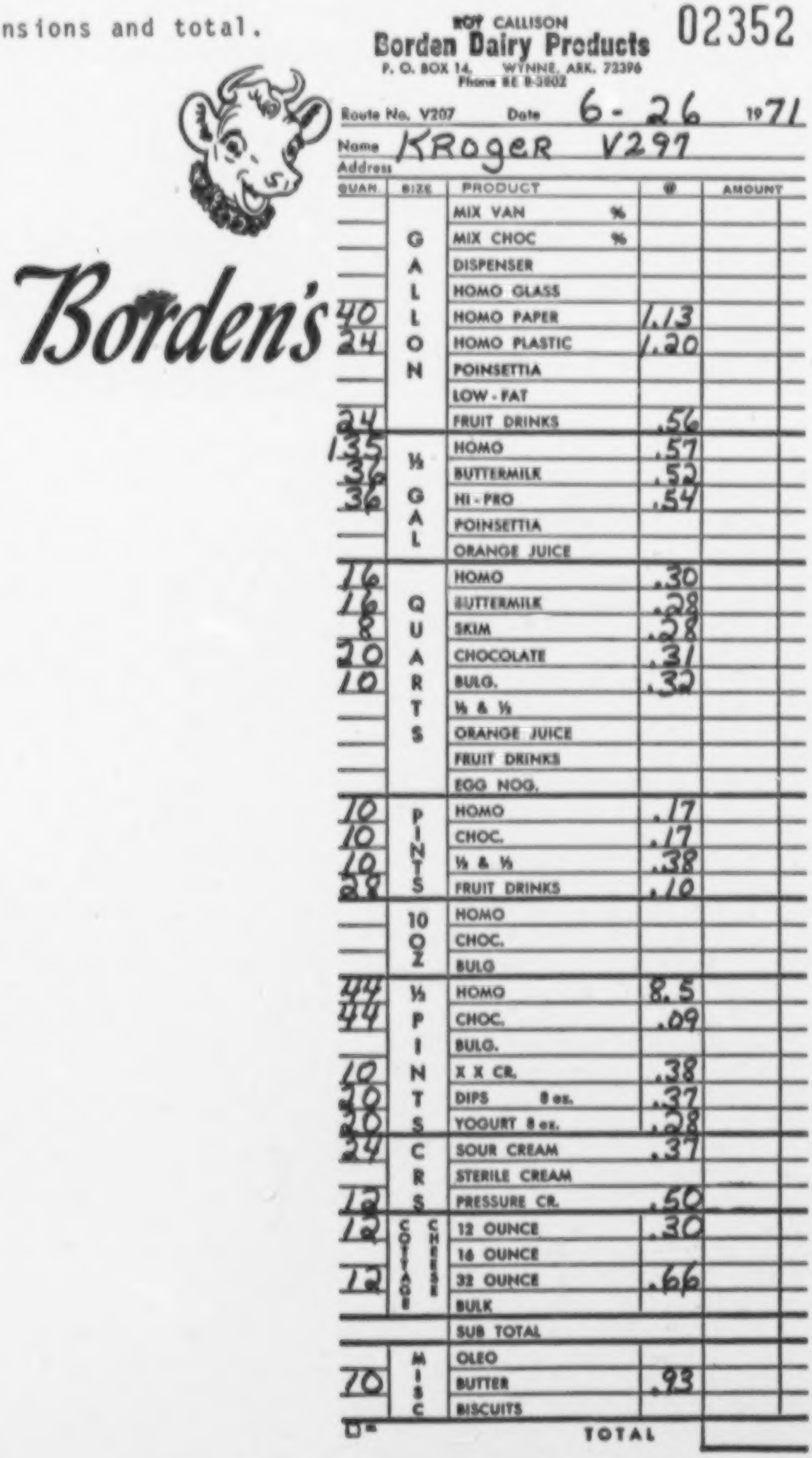
b. $\boxed{9546} \times .021 = 2.00466$

c. $1.5328 \times \boxed{9776} = 1.49846528$

d. $\boxed{7456733} \times 67.543 = 503.650117019$

Practical Applications

1. Find extensions and total.



ROY CALLISON
Borden Dairy Products
P. O. BOX 14, WYNNE, ARK. 72396
Phone BE 8-3802

02352

Bordens

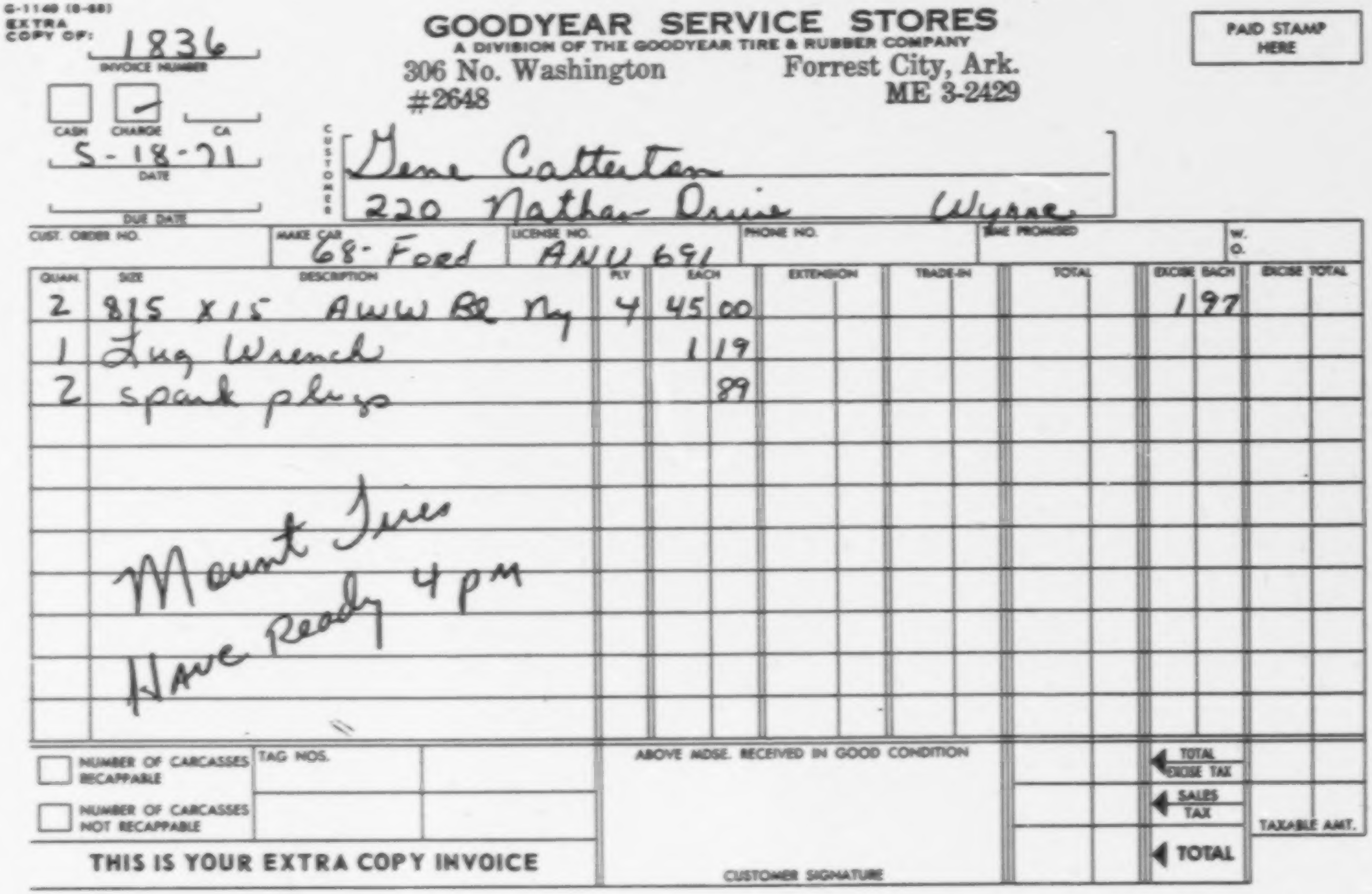
Route No. V207 Date 6-26 1971

Name KRoger V297

Address

QUAN.	SIZE	PRODUCT	@	AMOUNT
	GALLON	MIX VAN %		
		MIX CHOC %		
		DISPENSER		
		HOMO GLASS		
40		HOMO PAPER	1.13	
24		HOMO PLASTIC	1.20	
		POINSETTIA		
		LOW-FAT		
24		FRUIT DRINKS	.56	
135	½ GAL	HOMO	.57	
36		BUTTERMILK	.52	
36		HI-PRO	.54	
		POINSETTIA		
		ORANGE JUICE		
16	QUARTS	HOMO	.30	
16		BUTTERMILK	.28	
8		SKIM	.28	
20		CHOCOLATE	.31	
10		BULG.	.32	
		½ & ½		
		ORANGE JUICE		
		FRUIT DRINKS		
		EGG NOG.		
10	PINTS	HOMO	.17	
10		CHOC.	.17	
10		½ & ½	.38	
28		FRUIT DRINKS	.10	
	10 OZ	HOMO		
		CHOC.		
		BULG		
44	½ PINTS	HOMO	8.5	
44		CHOC.	.09	
		BULG.		
10		X X CR.	.38	
20		DIPS 8 oz.	.37	
20		YOGURT 8 oz.	.28	
24	CRS	SOUR CREAM	.37	
		STERILE CREAM		
12		PRESSURE CR.	.50	
12	COTTAGE CHEESE	12 OUNCE	.30	
		16 OUNCE		
12		32 OUNCE	.66	
		BULK		
		SUB TOTAL		
	MISC	OLEO		
70		BUTTER	.93	
		BISCUITS		
		TOTAL		

2. Joe, finish this for me. Don't forget state sales tax. By the way, if the customer needs time payments, ask for $10 down and the carrying charge will be 75.4% of unpaid balance. Bal @ $10⁰⁰ per month. Pete



G-1140 (8-68)
EXTRA COPY OF: 1836
INVOICE NUMBER

☐ CASH ☑ CHARGE ____ CA

5-18-71
DATE

DUE DATE

GOODYEAR SERVICE STORES
A DIVISION OF THE GOODYEAR TIRE & RUBBER COMPANY
306 No. Washington
#2648
Forrest City, Ark.
ME 3-2429

PAID STAMP HERE

CUSTOMER Gene Catterton
220 Nathan Drive Wynne

CUST. ORDER NO.	MAKE CAR	LICENSE NO.	PHONE NO.	TIME PROMISED	W. O.
	68- Ford	ANU 691			

QUAN.	SIZE	DESCRIPTION	PLY	EACH	EXTENSION	TRADE-IN	TOTAL	EXCISE EACH	EXCISE TOTAL
2	815 X15	AWW Bl Ny	4	45 00				1 97	
1		Lug Wrench		1 19					
2		spark plugs		89					

Mount Tires
Have Ready 4 pm

☐ NUMBER OF CARCASSES RECAPPABLE
☐ NUMBER OF CARCASSES NOT RECAPPABLE
TAG NOS.

ABOVE MDSE. RECEIVED IN GOOD CONDITION

CUSTOMER SIGNATURE

◄ TOTAL EXCISE TAX
◄ SALES TAX
◄ TOTAL
TAXABLE AMT.

THIS IS YOUR EXTRA COPY INVOICE

THIS IS YOUR EXTRA COPY INVOICE

Finish the cash slip. Find the time payment balance. How many months will it take to pay off the balance?

D. Division of Rational Numbers

Example: $\frac{7}{8} \div \frac{3}{4}$

Rename as: $$\frac{\frac{7}{8}}{\frac{3}{4}} \times 1 = \frac{\frac{7}{8} \times \frac{4}{3}}{\frac{3}{4} \times \frac{4}{3}} = \frac{\frac{7}{8} \times \frac{4}{3}}{\frac{12}{12}} = \frac{\frac{7}{8} \times \frac{4}{3}}{1} = \frac{7}{8} \times \frac{4}{3} = \frac{28}{24}$$

Exercises

1. a. $\frac{2}{7} \div \frac{1}{3} =$ b. $\frac{5}{3} \div \frac{1}{5} =$ c. $\frac{5}{6} \div \frac{1}{3} =$

   d. $\frac{2}{3} \div \frac{5}{6} =$ e. $\frac{3}{8} \div \frac{1}{2} =$

   f. Was the result of each exercise above a rational number? ________

   g. Can you think of an example where the result is not a rational number? ________

   h. Is the set of rational numbers closed under division?

   ____

2. $\frac{2}{3} \div \frac{4}{5} = \frac{10}{12}$ $\frac{4}{5} \div \frac{2}{3} = \frac{12}{10}$

   Is $\frac{2}{3} \div \frac{4}{5}$ the same as $\frac{4}{5} \div \frac{2}{3}$? ________

   Is division commutative? ________

3. $\left(\frac{2}{3} \div \frac{1}{4}\right) \div \frac{3}{5} = \frac{40}{9}$ and $\frac{2}{3} \div \left(\frac{1}{4} \div \frac{3}{5}\right) = \frac{24}{15}$

   Is division associative? ________

Exercises

Work each problem and put the answer in the appropriate square in the chart.

1. $\frac{3}{4} \div \frac{5}{4}$
2. $\frac{6}{7} \div \frac{1}{14}$
3. $\frac{12}{13} \div \frac{13}{7}$
4. $\frac{5}{3} \div \frac{6}{9}$
5. $\frac{4}{16} \div \frac{3}{4}$
6. $\frac{15}{20} \div \frac{3}{5}$
7. $\frac{34}{22} \div \frac{13}{11}$
8. $\frac{8}{21} \div \frac{3}{7}$
9. $\frac{27}{35} \div \frac{3}{7}$
10. $\frac{10}{24} \div \frac{5}{12}$
11. $\frac{15}{25} \div \frac{7}{5}$
12. $\frac{136}{238} \div \frac{9}{14}$
13. $\frac{19}{18} \div \frac{5}{6}$
14. $\frac{81}{64} \div \frac{27}{16}$
15. $\frac{125}{169} \div \frac{25}{26}$
16. $\frac{144}{289} \div \frac{36}{34}$

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

Compound Savings

A teenage boy decided to save his money for 30 days. The first day he saved 1¢, the second day 2¢, the third 4¢, and the fourth 8¢. If he continues to save twice as much money each succeeding day, how much will he have accumulated at the end of the 30 day period?

E. Reading decimal numerals:

When reading a mixed decimal, the decimal point is read "and". First read the whole number, then read the word "and" to show the position of the decimal point, and then read the decimal fraction.

ten-thousands	thousands	hundreds	tens	ones	and	tenths	hundredths	thousandths	ten-thousandths	hundred-thousandths	millionths
			2	4	·	5	4				

Twenty-four

and

fifty-four hundredths

EXERCISES

Write the following decimal numerals in words.

1. 8.6 ____________________
2. 100.43 ____________________
3. .50062 ____________________
4. .00009 ____________________
5. 5.0 ____________________
6. 225.089 ____________________
7. 4.1575 ____________________

F. Writing decimal numerals:

To write a mixed decimal, write the whole number, place the decimal point after the whole number, and then write the decimal fraction.

EXERCISES

1. eighty hundredths __________ 2. five hundredths ______

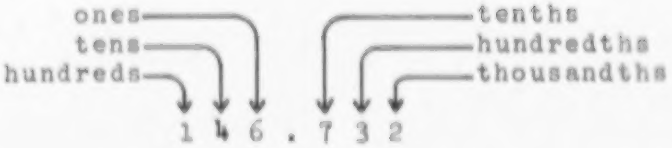
3. eight thousandths __________ 4. one ten-thousandth ______

5. one hundred twenty-eight and two tenths ____________

6. two hundred six and twenty-six hundredths ____________

7. three thousand and eight hundredths ____________

G. Rounding Off Decimal Numerals



Examples:

1. It is 713 miles from New York to Chicago; this distance might be quoted as a distance of 700 miles. We say that 713 has been rounded off to the nearest 100 miles.

2. When 17.462 is rounded off to tenths the result is 17.5. Why?

   Steps to follow in rounding off any decimal number:

   a. Locate the digit that is in the "round off" position. Draw a square around it.

   $$17.\boxed{4}62$$

   b. Draw a circle around the digit to the right of the square.

   $$17.\boxed{4}\textcircled{6}2$$

   c. If the digit in the circle is a 5, 6, 7, 8, or 9, then add one to the digit in the square. Replace all digits to the right of the square with zeros.

   $$17.\boxed{5}00 \text{ or } 17.5$$

   d. If the digit in the circle is a 0, 1, 2, 3, or 4, then do not change the digit in the square. Replace all digits to the right of the square with zeros.

3. When 13.827 is rounded off to tenths, the result is 13.800 or just 13.8.

EXERCISES

1. Round off 7253.483 to:

   a. Hundredths ____________

   b. Tenths ____________

   c. Ones ____________

   d. Tens ____________

   e. Hundreds ____________

   f. Thousands ____________

2. Round off the following numbers to one's place:

   a. 147.2 = ____________

   b. 95.68 = ____________

   c. 4723.01 = ____________

   d. 93.51 = ____________

   e. 94.5 = ____________

   f. 89.7 = ____________

   g. 26.49 = ____________

3. Round off the following numbers to hundredths:

   a. 1.255 = ____________

   b. 14.314628 = ____________

   c. 90.88888 = ____________

   d. 33.33333 = ____________

   e. 141 = ____________

   f. 192.65499 = ____________

4. Round off products as indicated:

   a. Hundredths 4.5 x .16 = ____________

   b. Tenths 176.9 x 2.3 = ____________

   c. Thousandths 2.5398 x 86 = ____________

   d. Hundredths 8963.5427 x 8.36 = ____________

   e. Ten thousandths 69.5199 x 56.1 = ____________

   f. Tenths 4.6 x 18.5 = ____________

   g. Ones 100 x 0.14 = ____________

   h. Hundredths 123 x 9 = ____________

   i. Tens 26.93 x 14.6 = ____________

   j. Hundreds 100 x 14.6 = ____________

   k. Thousands 236 x 7.39 = ____________

CONSOLIDATED BALANCE SHEET

ASSETS

	1966	Round Off
		hundreds
PROPERTY, PLANT AND EQUIPMENT	$413,718,836	
Less: Reserves for depletion and depreciation	124,900,411	
	$288,818,425	
		hundred thousands
INVESTMENTS, at cost:		
Municipal bonds	$ 1,033,215	
Miscellaneous	3,656,144	
	$ 4,689,359	
		tens
CURRENT ASSETS:		
Cash	$ 5,706,685	
Temporary cash investments	68,204	
Special deposits	215,392	
Accounts Receivable:		
Customers	20,925,101	
Others	16,798,149	
Notes receivable—including installments due after one year:		
Customers	9,051,515	
Others	4,651,408	
Inventories:		
Extracted products, chemicals and crude oil,		thousands
at market or cost	1,212,798	
Cement products, at cost	684,592	
Materials and supplies, at average cost	5,190,541	
Manufactured products, lower of FIFO cost or market	11,996,828	
Gas in underground storage, at average cost	200,779	
Other current and accrued assets	—	
Prepayments	600,616	
	$ 77,302,608	
DEFERRED CHARGES:		millions
Debt discount and expense being amortized over		
life of outstanding issues	$ 1,564,681	
Other	7,984,171	
	$ 9,548,852	
	$380,359,244	

THE NOTES TO FINANCIAL STATEMENTS ARE AN INTEGRAL PART OF THIS STATEMENT.

H. Changing Fractions To Decimal Equivalents

To change a fraction to decimal form, divide the numerator by the denominator. The decimal point in the quotient should be located directly above the decimal point in the dividend.

Example: $$\begin{array}{r} .75 \\ 4\overline{)3.00} \\ \underline{2\,8} \\ 20 \\ \underline{20} \end{array} = .75 \text{ so } \frac{3}{4} = .75$$

Exercises

Change each of the following fractions to decimal form. Carry out as many decimal places as necessary.

1. $\frac{4}{5}$ 2. $\frac{7}{8}$ 3. $\frac{1}{4}$ 4. $\frac{1}{2}$ 5. $\frac{1}{5}$ 6. $\frac{13}{25}$

7. $\frac{11}{20}$ 8. $\frac{15}{16}$ 9. $\frac{1}{8}$ 10. $\frac{8}{5}$ 11. $\frac{9}{50}$ 12. $\frac{123}{500}$

In division of decimals, change the decimal fraction to a fraction having whole numbers as the numerator and the denominator. Then divide the regular way. Notice the use of 1, the identity for multiplication, in the examples.

Examples: 1. .3 x .4

$$\frac{.3}{.4} = \frac{.3}{.4} \times \frac{10}{10} = \frac{30}{40} = .75$$

2. 2.70 ÷ .6

$$\frac{2.70}{.6} \times \frac{100}{100} = \frac{270}{60} = 4.5$$

3. 3.16 ÷ .4

$$\begin{array}{r} 7.25 \\ .40_{\wedge}\overline{)3.16_{\wedge}00} \end{array}$$

Exercises

Change the following fractions to decimals.

1. $\frac{3}{4} =$

2. $\frac{4}{8} =$

3. $\frac{3}{5} =$

4. $\frac{4}{7} =$

5. $\frac{5}{32}$

6. $\frac{43}{50} =$

7. $\frac{1}{2} =$

8. $\frac{2}{7} =$

9. $\frac{1}{6} =$

10. $\frac{1}{8} =$

11. $\frac{1}{12} =$

12. $\frac{3}{1} =$

13. $\frac{7}{20} =$

14. $\frac{5}{36} =$

15. $\frac{3}{1000} =$

16. $\frac{0}{1} =$

17. $\frac{3}{8} =$

18. $\frac{4}{16} =$

19. $\frac{5}{7} =$

20. $\frac{5}{3} =$

Brain Teaser

In a will, a man leaves $626.00 to three friends. When the man dies, his friends are 20, 30 and 50. Divide the money among the three in proportion to their ages.

CALCULATOR PRACTICE

Decimal Values Of Rational Numbers < 1

(Save for Reference)

X	1	2	3	4	5	6	7	8	9	10
1/2	.5000	☒	☒	☒			☒			☒
1/3										
1/4			.7500				☒			
1/5										
1/6						☒				
1/7									☒	
1/8					.6250					
1/9										
1/10										☒
1/11										
1/12										
1/13										
1/14				.2857						
1/15										
1/16									.5625	
1/17										
1/18										
1/19						.3158				
1/20										

Complete the chart using four decimal place accuracy.

Mark X in rectangles whose value is not less than one.

Example: $\frac{3}{4} = \frac{1}{4} \cdot 3 \left\{ \begin{array}{l} \text{Locate } \frac{1}{4} \text{ on left} \\ \text{Locate 3 at top} \end{array} \right\} = .7500$

Decimal Values of Rational Numbers < 1

(Save for Reference)

X	11	12	13	14	15	16	17	18	19	20
1/12	.9167	☒	☒				☒			
1/13										
1/14				☒		☒				
1/15									☒	
1/16										
1/17										
1/18										☒
1/19						.8421				
1/20										

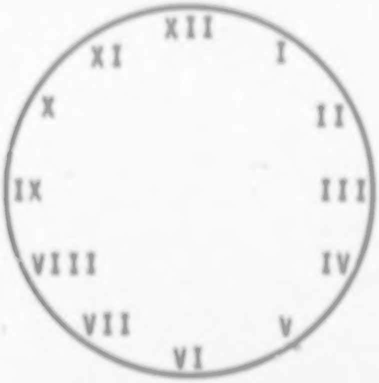
Complete the chart using four decimal place accuracy.

Mark X in rectangles whose value is not less than one.

Challenge Problem

A man drops a clock on the floor and it breaks into four pieces. Each piece shows a sum of 20.

Can you show where the breaks occurred? Is it possible for the breaks to have occurred in more than one way and still show sums of 20?



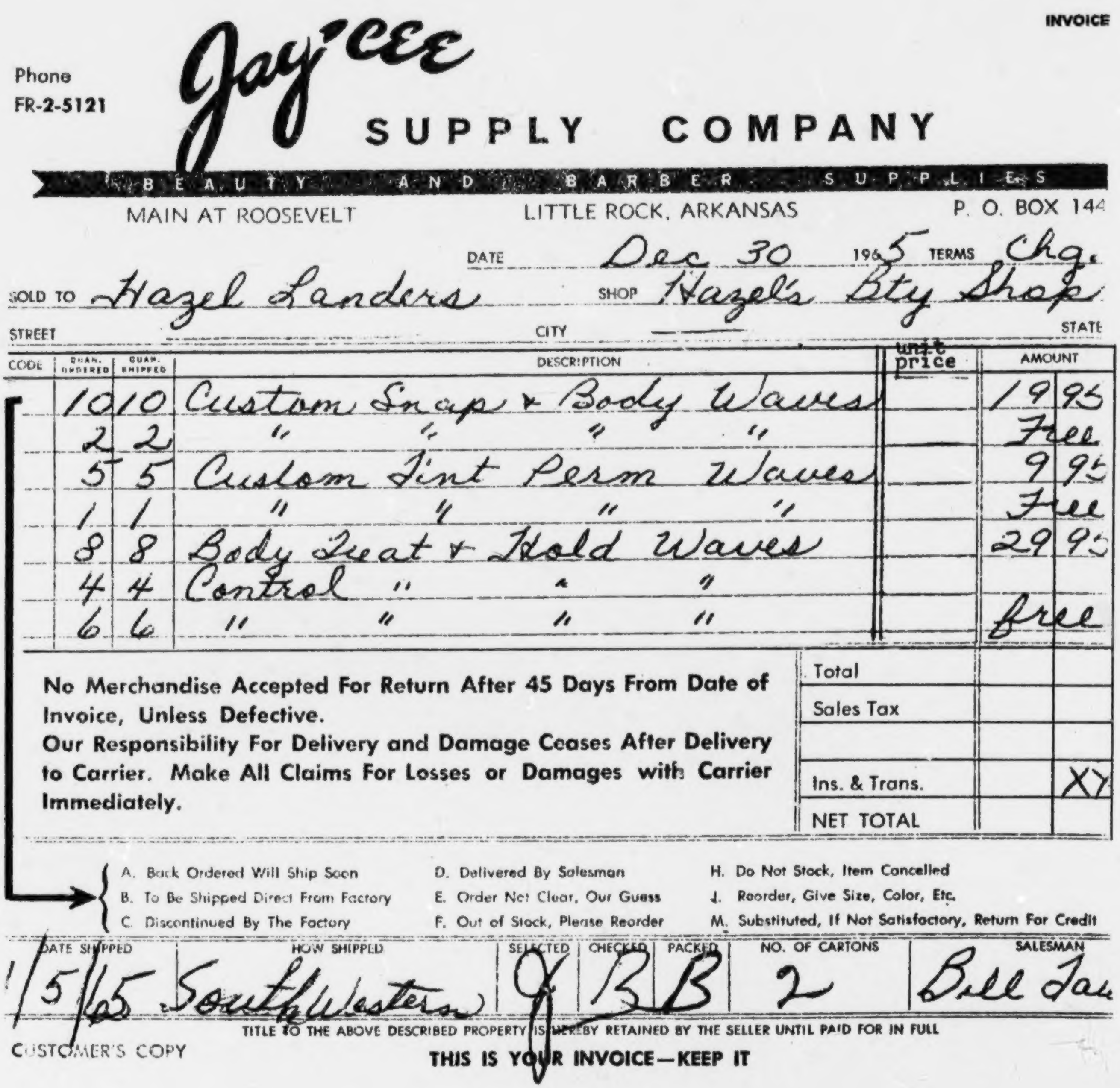
Exercises

Use machines to check the problems by multiplying.

1. $25\overline{)\,.10600}$
2. $.823\overline{)\,1.28388}$
3. $5.41\overline{)\,3.50027}$
4. $.798\overline{)\,52.1094}$
5. $.1225\overline{)\,1.057175}$
6. $66.59\overline{)\,30.21854}$

Work these problems on the calculator.

7. .952 ÷ 5.6 = ______
8. 94.08 ÷ 1.12 = ______
9. 31.904 ÷ 9.97 = ______
10. 49.94032 ÷ 66.41 = ______
11. .118944 ÷ 5.664 = ______
12. 18.4815 ÷ .555 = ______
13. 654.61466 ÷ 7.42 = ______
14. 2192.542 ÷ 99.651 = ______
15. 184.7032 ÷ 5.56 = ______
16. 53.9377 ÷ 54.1 = ______
17. .20522 ÷ 6.62 = ______
18. 33.75 ÷ .15 = ______
19. 1.4518 ÷ .017 = ______
20. 152.49 ÷ 6.63 = ______
21. 59.51 ÷ 1.1 = ______
22. 6.660 ÷ 1.5 = ______



INVOICE

Phone
FR-2-5121

Jay-Cee
SUPPLY COMPANY

BEAUTY AND BARBER SUPPLIES

MAIN AT ROOSEVELT LITTLE ROCK, ARKANSAS P. O. BOX 144

DATE Dec 30 1965 TERMS Chg.

SOLD TO Hazel Landers SHOP Hazel's Bty Shop

STREET CITY STATE

CODE	QUAN. ORDERED	QUAN. SHIPPED	DESCRIPTION	unit price	AMOUNT	
	10	10	Custom Snap + Body Waves		19	95
	2	2	" " " "		Free	
	5	5	Custom Tint Perm Waves		9	95
	1	1	" " " "		Free	
	8	8	Body Treat + Hold Waves		29	95
	4	4	Control " " "			
	6	6	" " " "		free	

No Merchandise Accepted For Return After 45 Days From Date of Invoice, Unless Defective.
Our Responsibility For Delivery and Damage Ceases After Delivery to Carrier. Make All Claims For Losses or Damages with Carrier Immediately.

Total		
Sales Tax		
Ins. & Trans.		XY
NET TOTAL		

A. Back Ordered Will Ship Soon
B. To Be Shipped Direct From Factory
C. Discontinued By The Factory
D. Delivered By Salesman
E. Order Not Clear, Our Guess
F. Out of Stock, Please Reorder
H. Do Not Stock, Item Cancelled
J. Reorder, Give Size, Color, Etc.
M. Substituted, If Not Satisfactory, Return For Credit

DATE SHIPPED	HOW SHIPPED	SELECTED	CHECKED	PACKED	NO. OF CARTONS	SALESMAN
1/5/65	South Western	J	B	B	2	Bill Tau

TITLE TO THE ABOVE DESCRIBED PROPERTY IS HEREBY RETAINED BY THE SELLER UNTIL PAID FOR IN FULL

CUSTOMER'S COPY

THIS IS YOUR INVOICE—KEEP IT

Find the total, the sales tax, and the net total. Find the price per item on each entry. Do not include free items in figuring the unit price.

CROSS COUNTY HOSPITAL
POST OFFICE DRAWER H
WYNNE, ARKANSAS 72396

Problems in Hospital Laundry

During April 1966 a hospital laundry processed 123,950 lbs. of linen. The total number of hours worked by all laundry employees was 3,040. The total cost for all supplies and salaries was $7,150.

Question:

1. What was the number of lbs. of laundry processed per employee hour?
2. What was the cost per lb. to process the laundry?

Problem in Medical Records Department

Total salary expense in Medical Records Dept. during April 1966 was $2,490.32.

Total other expenses in Medical Records Dept. during April 1966 was $255.85.

Total patients discharged during April 1966 was 1,155.

Question:

1. How much did it cost to process each patient's chart?

SCHOOL SUPPLIES, INC.

SCHOOL SUPPLIES * WHOLESALE AND RETAIL

On the following page you will find an invoice for merchandise ordered from Mallard Pen and Pencil Company, Inc. See if you can answer the following questions in regard to these materials:

1. What was the date of the order?________________
2. What was the shipping date?________________
3. How was the merchandise shipped?________________
4. Who paid freight on this shipment?________________
5. Was all the merchandise shipped that was ordered?________
6. What are the terms of the sale and how much does this discount amount to on this order?________________
7. How many pencils in a gross?________________
8. How many dozen in a gross?________________
9. How many cases in this shipment?________________
10. What was the total weight of the shipment?________________
11. If the "Humdinger" pencils sold for $2.16 per gross, what would the per cent of mark-up be?________________
12. What is the cost price per compass?________________
13. What is the cost price of compasses per dozen?________
14. What is the cost price per ruler?________________
15. Write a check to pay the bill.

INVOICE

Mallard PEN & PENCIL CO., INC. **No.** 8470

PENCILS OF QUALITY • GEORGETOWN, KENTUCKY

SOLD TO

SHIP TO
SAME

TERMS: 2% EOM NET 60

CUSTOMER ORDER NO.	DATE OF ORDER 10-24-71	SALESMAN THORNTON	TO BE SHIPPED ASAP
INVOICE DATE 10-29-71	SHIPPING DATE 10-29-71	SHIPPED VIA TRUCK PREPAID 243	NO. OF CASES 4

QUANTITY ORDERED		BACK ORDER	DESCRIPTION	QUANTITY SHIPPED	UNIT PRICE	VALUE
GROSS	CATALOGUE NUMBER					
75	25	0	HUMDINGER	75	1.62	121.50
2	2111	0	RULERS	2	6.48	12.96
2	1425	0	ERASERS	2	3.60	7.20
1	5760	0	COMPASS	1	14.40	14.40
1	1800	0	PRECISION	1	4.40	4.40
						160.46

Paid
11-10-71
#6334

NO GOODS CAN BE RETURNED WITHOUT OUR PERMISSION. NO FREIGHT ALLOWANCE ON LESS THAN __________ LBS. ALL PRODUCTS OF THIS COMPANY ARE MANUFACTURED IN COMPLIANCE WITH THE FAIR LABOR STANDARDS ACT OF 1938 AS AMENDED. 6% INTEREST CHARGED ON PAST DUE ACCOUNTS.

I. Renaming Rational Numbers

Exercises

1. a. $1 = \frac{\square}{1}$ b. $\frac{5}{5} = \square$ c. $1 = \frac{7}{\square}$

d. $1 = \frac{8}{\square}$ e. $\frac{9}{9} = \square$

2. a. $\frac{12}{15} = \frac{\square}{\square} \cdot \frac{4}{5}$ b. $\frac{2}{3} \cdot \frac{\square}{\square} = \frac{14}{21}$

c. $\frac{\square}{\square} \cdot \frac{7}{8} = \frac{28}{32}$ d. $\frac{8}{36} = \frac{2}{9} \cdot \frac{\square}{\square}$

e. $\frac{1}{7} \cdot \frac{\square}{\square} = \frac{3}{21}$

3. a. $8 = \frac{8}{\square}$ b. $\frac{3}{4} + \frac{3}{5} = \frac{\square}{20} + \frac{\square}{20}$

c. $6 = \frac{\square}{1}$ d. $\frac{1}{2} + \frac{2}{3} = \frac{\square}{6} + \frac{\square}{6}$

e. $\frac{2}{3} + \frac{1}{6} = \frac{4}{\square} + \frac{1}{\square}$

4. a. $5\frac{2}{3} = 5 + \square$ b. $4\frac{1}{4} = \frac{\square}{4} + \frac{\square}{4}$

c. $9\frac{1}{6} = \square + \frac{1}{6}$ d. $3\frac{4}{7} = \frac{21}{\square} + \frac{4}{\square}$

5. Change fractions to decimals or vice versa:

a. $\frac{2}{5}$ = ☐   b. $\frac{7}{8}$ = ☐   c. $\frac{6}{5}$ = ☐

6. Write the numeral represented by the following:

a. 2^2= ☐   b. 3^3= ☐   c. 4^2= ☐

7. Write in exponent form:

a. 49 = ☐   b. 25= ☐   c. 81= ☐

8. Fill in the blanks:

a. 15 minutes = _______ hrs.

b. 2 pounds = ___ ___ ounces

c. _______ inches = 2½ feet

d. 2 quarters = _______ dimes

e. _______ yards = 72 inches

9. (Optional)

a. 82_{ten} = $☐_{eight}$

b. 122_{three} = $☐_{ten}$

NUMBERS DIVISIBLE BY THREE

Any number is divisible by 3 if the sum of the digits is divisibl by 3. For example, 129 is divisible by 3 since 1 + 2 + 9 = 12 and 12 is divisible by 3. Checking, we see that 129 divided by 3 is 43.

Is 8217 divisible by 3?

When is a number divisible by 2?

When is a number divisible by 5?

When is a number divisible by 10?

J. Finding the Least Common Multiple

Exercises

1. R is the set of the multiples of 5.
   R = { }

2. Q is the set of the multiples of 6.
   Q = { }

   a. Is the set of multiples of 5 finite or infinite? ______

   b. Is the set of multiples of 6 finite or infinite? ______

3. The members common to both sets R and Q form a new set.
   E = { }

   This is the set of common multiples of 5 and 6.

4. What is the least element in set E? ________

   This is called the Least Common Multiple of 5 and 6.

5. Now what about the numbers 8 and 12?

   Multiples of 8 = { }

   Multiples of 12 = { }

   Common multiples of 8 and 12 = { }

   Least common multiple of 8 and 12 is ☐

6. By forming sets of multiples, find the Least Common Multiple of:

   a. 12 and 15

      multiples of 12 = { }

      multiples of 15 = { }

      common multiples of 12 and 15 =

      LCM is ☐ { }

   b. Multiples of 6 = { }

      Multiples of 8 = { }

      Multiples of 9 = { }

      Common multiples of 6, 8, 9 = { }

      LCM is ☐

   c. 8, 9, 12

7. Find the LCM of the denominators in the following problems.

a. $\frac{2}{5} + \frac{1}{2} + \frac{2}{3}$ LCM =

b. $\frac{4}{5} + \frac{8}{9} + \frac{1}{5}$ LCM =

c. $\frac{9}{10} + \frac{4}{5} + \frac{14}{15}$ LCM =

d. $\frac{4}{7} + 5 + \frac{9}{2}$ LCM =

e. $\frac{2}{3} + \frac{1}{27} + \frac{4}{9}$ LCM =

f. $\frac{4}{16} + 3 + \frac{6}{7}$ LCM =

g. $\frac{4}{13} + \frac{1}{2} + \frac{3}{2}$ LCM =

h. $\frac{7}{18} + \frac{3}{13} + \frac{5}{6}$ LCM =

i. $\frac{9}{10} + \frac{10}{9} + \frac{10}{21}$ LCM =

j. $\frac{3}{4} + \frac{4}{3} + \frac{1}{5}$ LCM =

k. $\frac{4}{45} + \frac{1}{15} + \frac{42}{45}$ LCM =

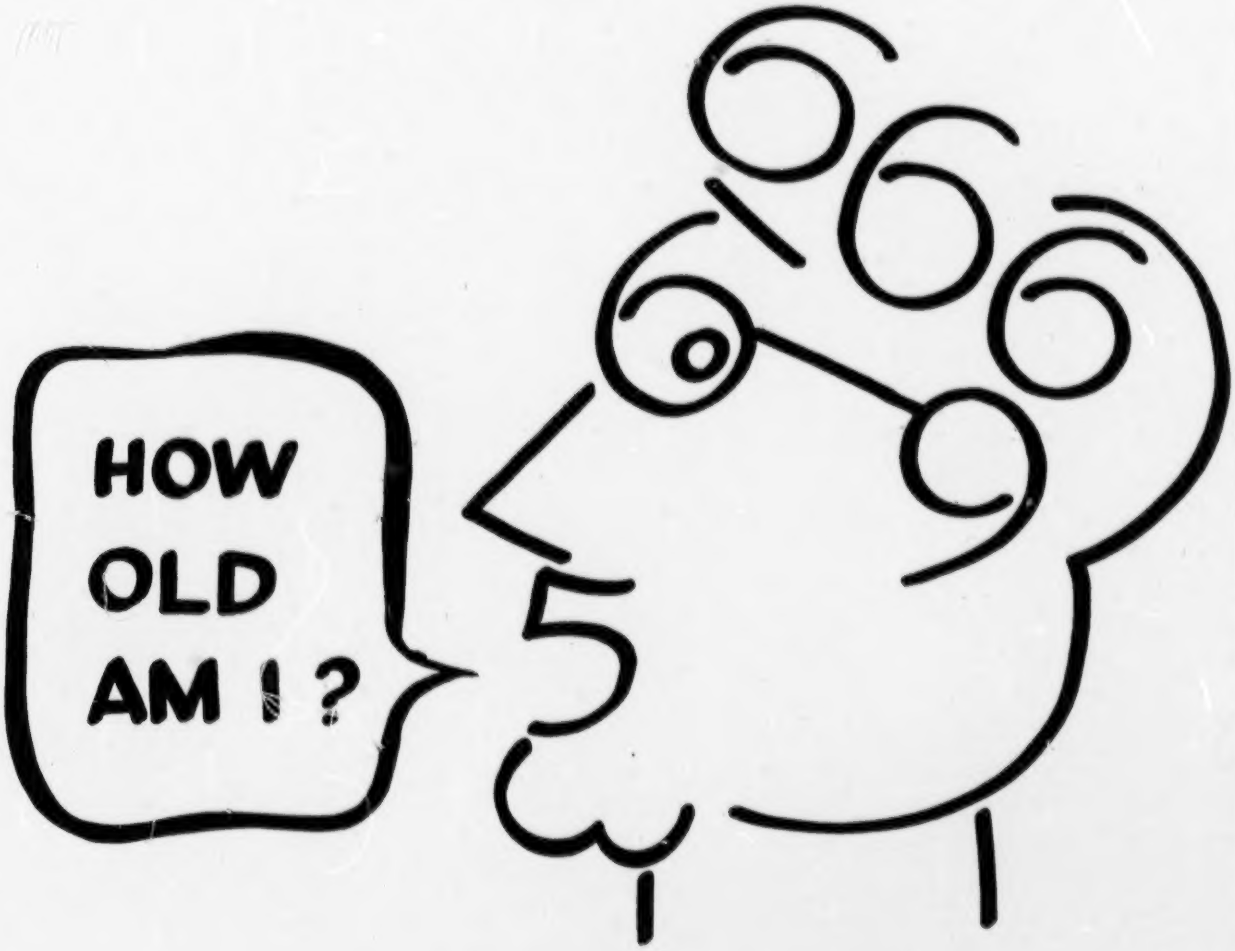
l. $\frac{24}{29} + \frac{13}{39} + \frac{128}{13}$ LCM =

K. Changing Mixed Numerals to Improper Fractions

Exercises

1. $6\frac{1}{3} =$
2. $2\frac{1}{3} =$
3. $3\frac{1}{3} =$
4. $3\frac{1}{2} =$
5. $4\frac{1}{2} =$
6. $5\frac{1}{2} =$
7. $5\frac{1}{4} =$
8. $5\frac{2}{4} =$
9. $7\frac{2}{4} =$
10. $53\frac{3}{21} =$
11. $3\frac{5}{41} =$
12. $3\frac{5}{6} =$
13. $11\frac{5}{9} =$
14. $9\frac{2}{3} =$
15. $53\frac{1}{6} =$
16. $2\frac{3}{4} =$
17. $9\frac{3}{7} =$
18. $3\frac{1}{10} =$

Grandfather Time



L. Addition of Fractions

Example:

$$\frac{3}{4} + \frac{4}{5} = \left(\frac{3}{4} \cdot \frac{5}{5}\right) + \left(\frac{4}{5} \cdot \frac{4}{4}\right) = \frac{15}{20} + \frac{16}{20} = \frac{31}{20}$$

Exercises

1. $\frac{1}{3} + \frac{1}{3} =$

2. $\frac{5}{7} + \frac{1}{7} =$

3. $\frac{6}{13} + \frac{2}{13} + \frac{3}{13} =$

4. $\frac{3}{4} + \frac{3}{8} =$

5. $\frac{5}{12} + \frac{1}{3} =$

6. $\frac{1}{2} + 4 =$

7. $\frac{1}{3} + \frac{1}{4} =$

8. $\frac{5}{4} + \frac{9}{8} =$

9. In the above problems is each answer a rational number? ____

10. Are the rational numbers closed under addition? ________

Trick Numbers

1. Write twelve thousand twelve hundred and twelve.
2. Write one hundred using only the nine digits and the signs of arithmetic.
3. Write nineteen using only four 9's.

Exercises

Work each of the following problems and place the answers in the appropriate box in chart. After you have completed the chart find the sum of each row and column.

1. $\frac{1}{5} + \frac{2}{10}$
2. $\frac{4}{9} + \frac{4}{18}$
3. $\frac{1}{3} + \frac{5}{6}$
4. $\frac{3}{5} + \frac{4}{5}$
5. $\frac{5}{10} + \frac{4}{10}$
6. $\frac{7}{13} + \frac{12}{26}$
7. $\frac{18}{20} + \frac{3}{10}$
8. $\frac{9}{12} + \frac{1}{4}$
9. $\frac{5}{6} + \frac{9}{12}$
10. $\frac{7}{21} + \frac{2}{3}$
11. $\frac{4}{30} + \frac{4}{5}$
12. $1\frac{1}{3} + \frac{1}{2}$
13. $\frac{9}{16} + \frac{7}{16}$
14. $\frac{7}{12} + \frac{5}{6}$
15. $1\frac{1}{3} + \frac{2}{6}$
16. $\frac{6}{18} + \frac{2}{3}$

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

M. Addition Properties of Rational Numbers

Exercises

1. a. $\frac{1}{6} + \frac{4}{6} = \square + \frac{1}{6}$

   b. $\frac{3}{5} + \square = \frac{4}{5} + \frac{3}{5}$

   c. $\frac{2}{5} + \frac{3}{10} = \square + \frac{2}{5}$

   d. $\frac{2}{3} + \frac{7}{9} = \frac{7}{9} + \square$

You used the ____________________________ property to complete the above problem. Check your answers in the boxes by comparing the sum of the fractions on each side of the equal sign.

2. a. $\left(\frac{1}{5} + \frac{2}{5}\right) + \frac{4}{5} =$

   As problem a is written, what two fractions would you combine first? Then what fraction would you add to this sum? What is your answer?

   b. $\frac{1}{5} + \left(\frac{2}{5} + \frac{4}{5}\right) =$

   As problem b is written, what two fractions would you combine first? Then what fraction would you add to this sum? How does your final answer compare with a?

   c. $\left(\frac{3}{4} + \frac{2}{3}\right) = \frac{4}{5}$

   As problem c is written, what two fractions would you combine first? What do you have to do before combining them? What fraction would you add to this sum? Do you have to do the same as above before you can combine them? What is your answer?

   d. Rewrite problem c to indicate combining $\frac{3}{4}$ to the sum of $\frac{2}{3}$ and $\frac{4}{5}$. What answer do you get?

Problems a, b, c, and d illustrate the ________________________ property.

3. a. 2/3 + ____ = 2/3   b. 1/10 + 0 = ____   c. 0 + 5/6 = ____

How does the result of each of these problems compare with the given fraction? Can we assume that there exists an identity element for addition of fractions? If so, what is the identity element?

4. a. 1/5 + $^{-}1/5$ = ____   b. 4/5 + ____ = 0   c. ____ + -2/3 = 0

d. $^{-}7/8$ + 7/8 = ____   e. $^{-}9/7$ + ____ = 0   f. ____ + 5/9 = 0

What is true about the addends of each example above?

Compare the results of the above examples.

The result in all these problems is the ____________________ element for addition.

Therefore, each addend is the ____________________ of the other addend.

5. Complete the Fraction-o-Grams

	△	□	○	⬡
a.	3 1/2	5 4/5	1 1/8	2 3/4
b.	7/8	5/6	2/3	7/9
c.	1/4	3/4	5/4	1/7
d.	9/10	1/16	3/5	5/7

⬡ + (△ + □)	(○ + □) + △
a. 2 3/4 + (3 1/2 + 5 4/5) =	e. (1 1/8 + 5 4/5) + 3 1/2 =
b.	f.
c.	g.
d.	h.

N. Comparing Fractions

Exercises

1. Circle the larger fraction of each pair.

1/3 or 1/4
1/2 or 3/5
1/4 or 5/8
3/5 or 8/10
1/7 or 3/14
7/9 or 13/18

2. Cross out the incorrect word in the parentheses.

(a) For a particular fraction as the denominator decreases the value of the fraction (increases, decreases).

(b) For a particular fraction as the numerator increases the value of the fraction (increases, decreases).

3. Arrange these fractions from least to the greatest.

3/4 7/8 5/6 11/12 23/24

______, ______, ______, ______, ______.

4. Arrange these fractions from the greatest to the least.

3/8 5/6 3/4 5/12 7/10

______, ______, ______, ______, ______.

O. Addition of Decimals

Example:

Add: 14.32

5.678

In order to keep the decimal point in correct position, we must place zeros as placeholders. Then the problem rewritten would be:

$$\begin{array}{r} 14.320 \\ \underline{\ \ 5.678} \\ \downarrow\downarrow\ \ \downarrow\downarrow\downarrow \\ 19.998 \end{array}$$

Zeros are placed to give the same numbers of digits to the right of the decimal point.

Exercises

1. 146.59 + 11.687 =
2. 1,156.834 + 998.62 + 6.9 =
3. 742.544 + $^{-}$69.3194 + 7.13 =
4. 9,645.7853 + 573.478 + 69.72 + 17.9 =
5. $\begin{array}{r} 456.6 \\ 68.58 \\ \underline{79.474} \end{array}$
6. $\begin{array}{r} 4{,}456.93 \\ ^{-}579.643 \\ \underline{62.1455} \end{array}$
7. 77.77 + 5.555 + 333.3 =
8. 107.9 + 10.06 + 3.293 =
9. $104.93 + $87.45 + $6.57
10. ☐ + -709.45 = 57.567

Practical Applications

JUNIOR ACHIEVEMENT

Company Profits Tax Computation For Operating Year 19 -19

UNIRAC	South 31st & Tulsa	Fort Smith
Name of Company	Business Center Address	City

All tax receipts are retained in the local area for the benefit of achievers.

GROSS INCOME

1.	From sale of products or services		$911.50
2.	Other income		16.84
3.	Total income		
	DEDUCTIONS		
4.	Cost of goods sold:		
	a. Raw materials	$380.26	
	b. Direct labor	54.60	
5.	Rent		
6.	Shop supply	8.67	
7.	Office supply	48.84	
8.	Depreciation		
9.	Salaries and other compensation	56.60	
10.	Commissions	20.23	
11.	Other expenses		
	a. Advertising and promotion		
	b. Annual Report		
	c. Contributions		
	d. Bad debts		
	e. Other	24.25	
12.	Total deductions	$646.92	$646.92
13.	Net income before taxes		

No expenses on the following items: annual report, advertising and promotion, contributions, bad debts. and depreciation.

Compute total income, rent, and net income before taxes and write the results in the appropriate blanks.

☐ NO. ORDERS
☒ CHARGE
☒ C.O.D.

☐ NO CUSTOMER NO.
☒ NEW CUSTOMER
☐ NAME/ADDRESS CHANGE

STRATTON WARREN
Hardware Company

PAGE 1 OF 1
DATE 11-10-71

Cust. No.	SLS No.	Cust. Order No.	Sold To Graham Hardware
Ship Via ABF		PWP/COL	Address Union Ave.
When Ship 7-12-71	Dock	Discount	City & State , Ark. Zip Code 72396
Terms: 2% 10 net 60 8-10-71	Tax / Sub / Bo	Pack Slip	Attention:

Ship to - Credit Same
Address
City & State
Zip Code
Special Instructions

Item/Stock Number/Size/Color/Description	Index - Serial No.	Quantity	Selling Unit	Price Group	Price	PER	Extension
3 Rolls - 48" 2X4 Welder Wire	( )	3	Rolls	–	14 65	R	
12 Ea. - 84-103 ½ Stop + Drain	( )	12	ea.	–	1 27	ea.	
6 " - 84-105 ¾ " + "	( )	6	ea.	–	1 67	"	
6 " - 79-323 ½ Gate Valves	( )	6	"	–	1 05	"	
6 " - 79-325 ¾ " "	( )	6	"	–	1 33	"	
2 CT. - 2 D Flash Lite Batterys	( )	2	CT.	–	4 75	CT.	
	( )						
24 Ea. - ½ Cable Clamps	( )	25	C	–	19 65	C	
12 " 5/8 Cable Clamps	( )	12	C	–	25 60	C	
12 " ¾ " "	( )	12	C	–	36 40	C	
2 " 12# I.M.D Sledge w/Hdl	( )	2	ea.	–	4 90	ea.	
50 Ea. #0 Screw Eyes	( )	50	C	–	6 50	C	
50 " #2 " "	( )	50	C	–	4 20	C	
	( )				TOTAL		
{Find Extensions – C means Per Hundred}	( )						
	( )						

HOME
OF BETTER
VALUES

Oklahoma TIRE & SUPPLY
QUALITY PRICE
ASSOCIATE STORE

A
GOOD PLACE
TO TRADE

WYNNE, ARKANSAS DATE 6-27-71
SALESMAN EAC YOUR ORDER NO.
SOLD TO Dalton Fowler
ADDRESS 208 S Cottonwood
CITY Wynne STATE Ark.

QUAN.	DESCRIPTION OF ARTICLES	PRICE	TOTAL
1	License Plate Frame	2.49	
1	Fiberglass Muffler	5.98	
1	Oil Filter Opl 8	1.79	
1	HC 24S Battery	18.95	
1	Front Axle Bolt	.43	
1	3M Trim Adhesive	.98	
1	Fan Belt	1.09	
4	White Wall	.75	
2	Tail Pipe Extension	.98	
1	Turtle Wax	.89	
1	TK15 7MY Tune up Kit	1.59	
6	AC 44 Plugs	.79	
	Total		
	Tax		
	Net Total		

TERMS: NET — NO DISCOUNT
Star-Progress, Inc., Wynne, Arkansas

HOME
OF BETTER
VALUES

Oklahoma TIRE & SUPPLY
QUALITY PRICE
ASSOCIATE STORE

A V-8
GOOD PLACE
TO TRADE

WYNNE, ARKANSAS DATE 5-24-71
SALESMAN EAC YOUR ORDER NO.
SOLD TO Dalton Fowler
ADDRESS 208 S. Cottonwood
CITY Wynne STATE Ark.

QUAN.	DESCRIPTION OF ARTICLES	PRICE	TOTAL
1	Red Wagon	3.98	
1	Bill Fold	.97	
1	Can Spray paint	.99	
1	Can Spray paint	1.19	
2	Bicycle Pedal	.99	
1	Large Bicycle Basket	4.49	
	Bike accessories	6.26	
	Total		
	Tax		
	Net Total		

TERMS: NET — NO DISCOUNT
Star-Progress, Inc., Wynne, Arkansas 68932-3

Find the total price for each item, the Arkansas sales tax for each purchase slip, and the total amount purchased on each date.

P. Subtraction of Rationals

To subtract two fractions, use the identity for multiplication to get common denominators. Then subtract numerators from numerators and denominators from denominators.

Example:

$$2/3 - 3/5 = (2/3 \times 5/5) - (3/5 \times 3/3) = 10/15 - 9/15 = 1/15$$

Exercises

1. $\frac{4}{7} - \frac{2}{7} =$

2. $\frac{8}{15} - \frac{2}{15} =$

3. $\frac{4}{5} - \frac{1}{10} =$

4. $\frac{7}{8} - \frac{2}{5} =$

5. $1\frac{2}{9} - \frac{7}{8} =$

6. $1\frac{1}{4} - 1\frac{5}{6} =$

7. Is the answer to 6 a rational number?

8. $5\frac{1}{3} - 3\frac{2}{3} =$

9. $8 - 1\frac{7}{16} =$

10. $4\frac{3}{8} - 2\frac{1}{4} =$

11. $14\frac{1}{4} - 5\frac{2}{3} =$

12. $2\frac{3}{4} - 1\frac{1}{3} =$

13. $24\frac{1}{5} - 12\frac{2}{3} =$

14. $3\frac{7}{16} - 1\frac{3}{4} =$

15. $5\frac{4}{45} - 1\frac{1}{3} =$

Q. Subtraction Properties of Rational Numbers

Exercises

1. a. 3/4 - 1/4 = b. 13/15 - 7/15 = c. 5/9 - 1 1/2 =

   In the above problems, are all the answers rational numbers?

   Can you conclude, then, that the rational numbers are closed for subtraction?

2. a. 3/4 - 2/3 = b. 2/3 - 3/4 =

   What property of subtraction is illustrated in problem a. and b.?

   Examine the answers in a. and b; are these answers the same?

   Can we conclude that subtraction is commutative?

3. a. 3/4 - (2/3 - 1/2) = b. (3/4 - 2/3) - 1/2 =

   What do the above examples have in common?

   By form. do they show a property which we have already studied?

   What does the final result tell us about this property?

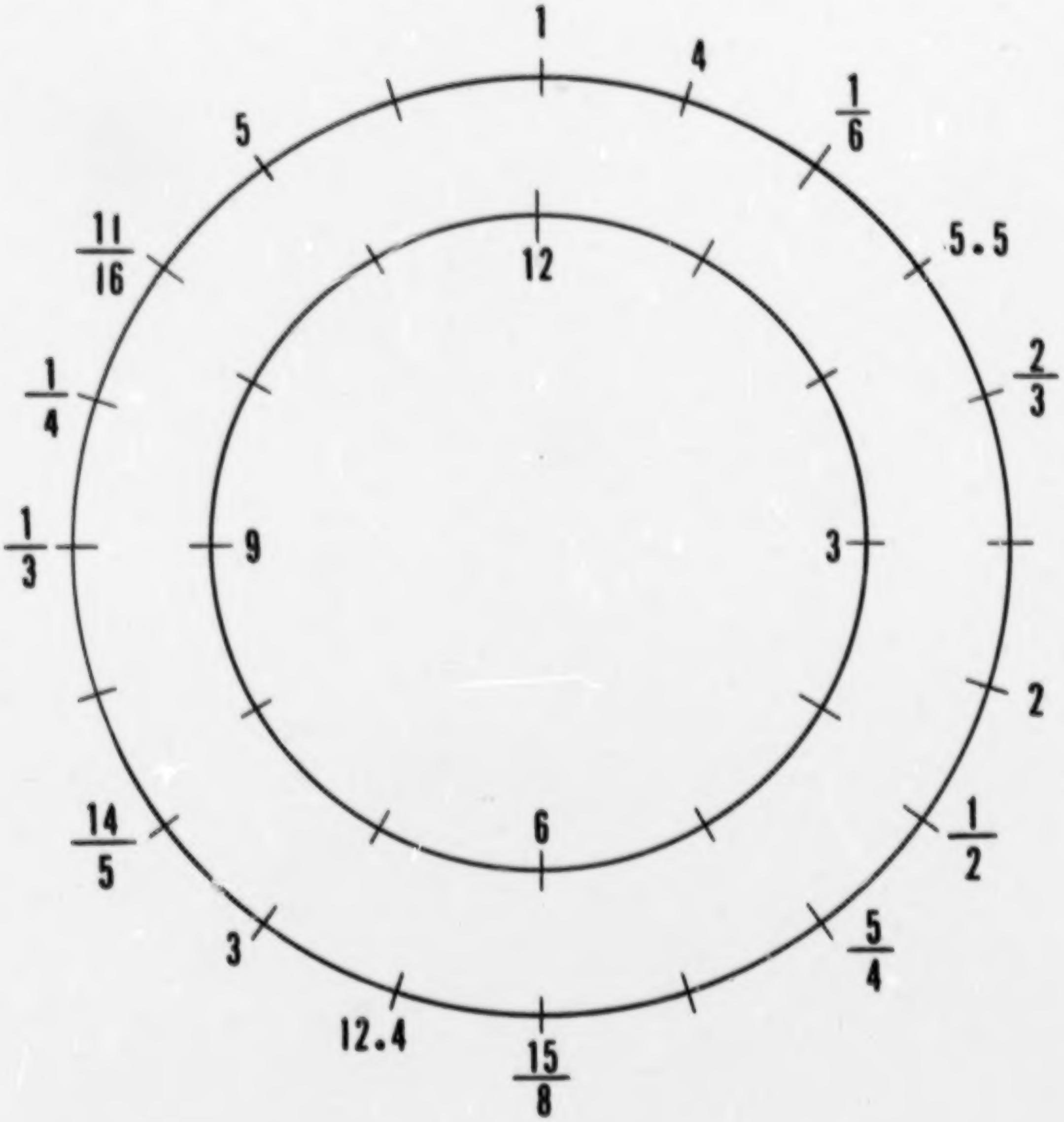
WHAT TIME IS IT?

Each problem consists of two parts. The answer to each part will be found on the outer circle. What time does each problem represent? (clock on page 109)

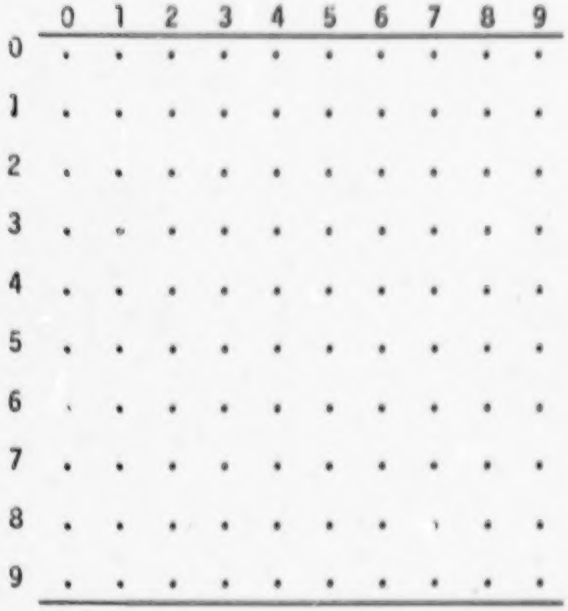
MINUTE HAND	HOUR HAND	TIME
Example: $\frac{3}{4} + \frac{1}{2} = \frac{5}{4}$	3.08 + 2.42 = 5.5	2:24 2:25
1. $\frac{3}{6} - \frac{1}{3} =$	2.08 - 1.08 =	
2. $\frac{3}{6} \times \frac{2}{3} =$	$1\frac{1}{4} \times 1\frac{2}{4} =$	
3. $\frac{5}{16} \times \frac{4}{5} =$	3.6 ÷ 1.2 =	
4. $\frac{16}{7} \div \frac{8}{7} =$	2.01 + 1.89 + 1.10 =	
5. $\frac{14}{7} \div \frac{5}{7} =$	$1 \div \frac{3}{2} =$	
6. 1.28 + 2.72 =	$\frac{5}{16} - \frac{3}{16} + \frac{6}{16} =$	
7. 1.32 + 11.08 =	$\frac{7}{16} + \frac{2}{8} - \frac{4}{4} + 1 =$	

Suggestion: Use toothpicks for hands on clocks to save erasing.

WHAT TIME IS IT?


1
4
1/6
5.5
2/3
2
1/2
5/4
15/8
12.4
3
14/5
1/3
1/4
11/16
5
12
3
6
9

Way Out Problem



Let the horizontal numbers represent the numerator and vertical numbers represent the denominator of a rational number.

Example: The dot circled is $\frac{7}{2}$. Join the dots representing the answers in the A and B part of each problem below.

By working the problems in order, circle the problem number at which you are able to determine the design.

1. a. $\frac{7}{1} - \frac{4}{1} = \frac{3}{1}$ b. $\frac{7}{3} - \frac{4}{3} = \frac{3}{3}$

2. a. $\frac{9}{4} - \frac{3}{4} =$ b. $\frac{12}{6} - \frac{6}{6} =$

3. a. $\frac{1}{5} - \frac{1}{5} = \frac{\quad}{5}$ b. $1 - \frac{3}{5} =$

4. a. $1 + \frac{1}{2} =$ b. $1 + \frac{2}{5} =$

5. a. $1 \times \frac{1}{2} = \square = \frac{\quad}{8}$ b. $\frac{2}{3} \times \frac{2}{3} =$

6. a. $\frac{1}{3} = \frac{\quad}{6}$ b. Same as 3 (a).

7. a. $\frac{4}{8} = \frac{1}{\square} = \frac{\square}{6}$ b. $\frac{11}{12} - \frac{1}{12} = \square = \frac{\square}{6}$

8. a. $1 - \frac{3}{4} =$ b. $\frac{2}{5} \cdot 4 =$

9. a. $1 = \frac{\square}{5}$ b. Same as 7 (b)

10. a. $\frac{1}{4} - \frac{1}{4} = \frac{\square}{4}$ b. $0 = \frac{\square}{6}$

11. a. $\frac{1}{7} + \frac{1}{3} = \square$ b. 11 (a) $+ \frac{1}{7} =$

12. a. $\frac{5}{12} \cdot \frac{12}{1} = \square = \frac{\square}{1}$ b. $\frac{4}{3} \div \frac{8}{10} = \square = \frac{5}{\square}$

13. a. $2\frac{1}{2} - 1\frac{3}{4}$ b. Same as 7 (a)

14. a. Same as 10 (a) b. $\frac{1}{2} = \frac{2}{\square}$

15. a. Same as 13 (a) b. $\frac{7}{8} + \frac{3}{8} = \square = \frac{\square}{4}$

16. a. Same as 15 (b) b. Same as 9 (a)

17. a. Same as 2 (b) b. $\frac{3}{2} - \frac{1}{3} = \square$

18. a. Same as 17 (b) b. Same as 8 (b)

19. a. $1 - \frac{2}{7} = \square$ b. Same as 11 (b)

20. a. Same as 14 (b) b. Same as 3 (b)

21. a. Same as 2 (a) b. Same as 8 (a)

22. a. Same as 11 (b) b. Same as 5 (a)

R. Subtraction of Decimal Numerals

Exercises

In the subtraction of decimals, zeros must also be placed to the right of the decimal point as placeholders.

1. 97.453 - 7.54 =
2. $\boxed{}$ + 98.976 = 244.476
3. 56.873 + $\boxed{}$ = 113.746
4. 1465.3 - 976.25 =
5. 783.768 - 13.656 =
6. .3869 - .0789 =
7. .97654 - .00423 =
8. .13 - .0078 =
9. 145 - 2.593 =
10. $\boxed{}$ + 991.55 = 1157
11. $863.57 - $79.41 =
12. $75.76 + $\boxed{}$ = $1,145

Count Down

Can you write from 10 to 1 backwards?
Time yourself. How many seconds did it take?

____ ____ ____ ____ ____ ____ ____ ____ ____ ____

Calculator Practice

Subtract:

1.	3,425.56	34,567.987	345.789		
	2,976.43	27,659.654	4.987		
2.	6,789	6,785	4,567	2,345	654
	2,345	3,456	2,345	345	345
3.	987,634	8,765,432	7,658,646		
	34,567	456,745	654,765		
4.	847,563.87	746,575.7856			
	36,585.75	25,346.7563			
5.	384,757,665.76	85,756,393.89			
	87,659,475.86	6,547,896.76			
6.	8,475.8578	958,674.9789	56.76		
	3,456.7658	654,354.9876	76.98		
7.	958,746,353.756	35,643,654.987			
	8,765,547.307	67,898,765.876			

S. Comparing Decimal Numerals

Exercises

1. Arrange these numbers from the least to the greatest.

   .9 .5683 .77

   .88 .34778 .06

2. Arrange these numbers from the greatest to the least.

   1.77 1.70 1.8

   1.08 1.50

   1.35 1.009

3. Arrange these numbers from the least to greatest.

   2.975 11.663 .8875

   5.1 6.005 70.466

   14.50998

4. Which has the least value? Circle answer

   a. Seven tenths or seven hundredths

   b. Nine hundredths or nine thousandths

   c. Two and five tenths or two and five thousandths

PERFECT NUMBERS

A number is perfect if it is the sum of its divisors. For example, 6 has divisors 1, 2, 3 (we exclude the number itself) and 1 + 2 + 3 = 6. There is only one other perfect number between 6 and 50. Can you find that number?

T. Order of Operations

Exercises

1. Place parentheses which show the operation(s) you would perform first.

   a. $4 \cdot 3 - 5$

   b. $8 + 7 \cdot 2$

   c. $8 - 4 \div 4$

   d. $6 \cdot 3 - 2 \cdot 4$

   e. $12 + 3 \cdot 5$

2. Find the value of each.

   a. $3 + 6 \cdot 5 =$

   b. $\frac{12}{3} - \frac{10}{5} =$

   c. $7 \cdot 3 + 4 \cdot 8 =$

   d. $2 \cdot 3 + 4 =$

   e. $3(5 + 6) =$

   f. $9 - 3 - 2 =$

   g. $9 - (3 - 2) =$

   h. $7\,(5 - 2) =$

   i. $9 - \frac{12}{3} + 6 \cdot \frac{8}{2} =$

   j. $5 \cdot 6 - 3 \cdot 2 + 8 \cdot 3 =$

3. Find the value of each.

   a. $12 + 13 - 2\,(3 - 1) =$

   b. $8 - 12 \div 6 + (7 - 1) - 5 =$

   c. $5 + (6 + \overline{3 - 2} + 4) =$

   d. $20 + 11 - 4 + \overline{7 - 2} + 1 + 4 - 15 =$

   e. $8\,[2 + 7 + (6 - \overline{4 - 8 \div 4}) + 2 \cdot 4 - 1] =$

   f. $43 - 2 + 19 + 4 + \overline{16 - 4} + 9 - 5 - 13 + 2 =$

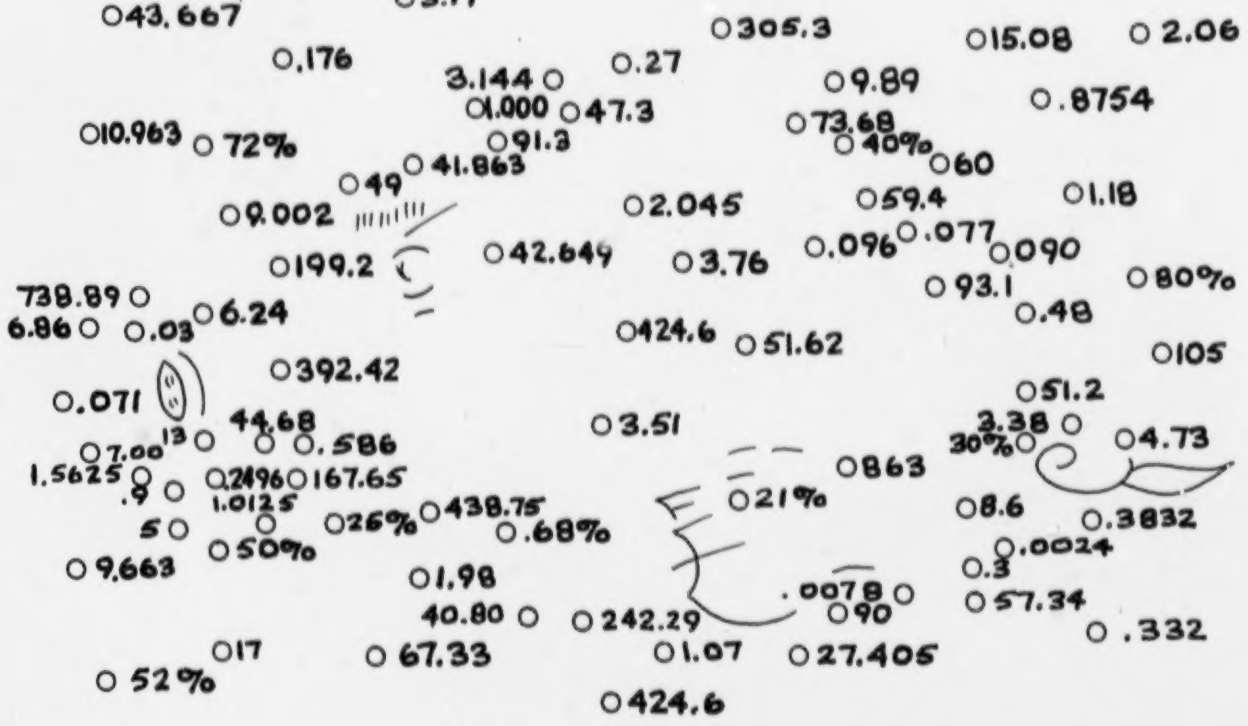
   g. $3 - 2 + (8 - 2 + \overline{5 + 3} - 4 \cdot 2) - 3 =$

   h. $23 + 6 + 3 - (7 + 4) - 8 =$

Exercises

1. $2 + [3 - 2 \cdot 3 \div 6] - 1 =$
2. $20 - [8 + 3 \cdot 2] + 4 =$
3. $[30 \div (5 \cdot 2)] - 3 =$
4. $[(27 \div 9) + (27 + 9) \div 3] =$
5. $[(14 \cdot 2) + 5] \div 11 =$
6. $(3 \cdot 9) + [\overline{9 \cdot 3} + 2] =$
7. $11 + 2\,(6 + 4) - 3(1 + 3) =$
8. $16 - \{10 \div 2 + (6 - 4) - 5\} =$
9. $18 - (9 + \overline{4 - 3} + 2) =$
10. $9 + \{20 - [5 + \overline{3 - 1} + 8] + 3\} - 8 =$
11. $14 - 5 + [3 \cdot 18 \div 2 - (18 + 2 - 10) - 5 - 3] - 11 =$
12. $45 \cdot \overline{8 - 5} + \overline{3 \cdot 17} \div \overline{59 - 8} =$
13. $941 \cdot [14 \div 2 + 10 - 17] + 8 =$

Dot to Dot

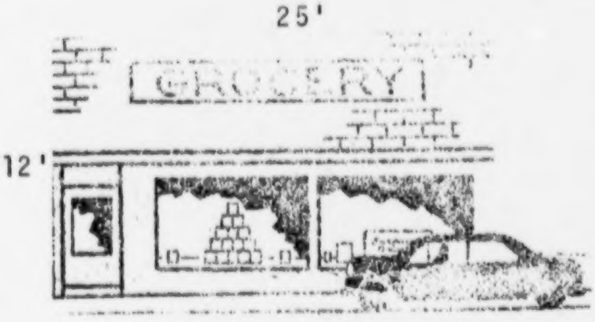

43.667
3.17
305.3
15.08
2.06
.176
3.144
.27
9.89
.8754
1.000
47.3
73.68
10.963
72%
91.3
40%
60
49
41.863
59.4
1.18
9.002
2.045
199.2
42.649
3.76
.096
.077
.090
93.1
80%
738.89
6.86
.03
6.24
.48
424.6
51.62
105
392.42
.071
51.2
44.68
3.38
7.00
13
.586
3.51
30%
4.73
1.5625
.2496
167.65
863
.9
1.0125
21%
8.6
50
26%
438.75
.68%
.3832
50%
.0024
9.663
1.98
.3
.0078
40.80
242.29
90
57.34
.332
17
67.33
1.07
27.405
52%
424.6

Complete the drawing by starting at the given answer and connecting in order the correct answers to the problems.

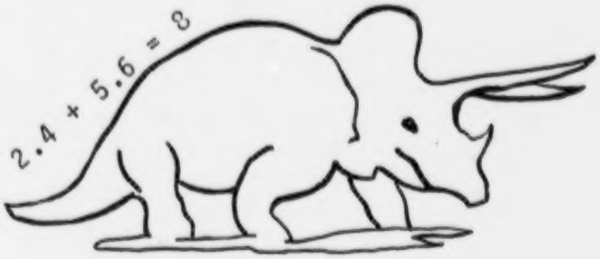
1 4.7 + .03 = 4.73
2 5.78 - 2.4 =
3 6.4 x 8 =
4 3.34 ÷ 8 =
5 .084 + .006 =
6 36 ÷ .6 =
7 7.82 + 2.07 =
8 67.3 + 238 =
9 9 x .03 =
10 112 - 64.7 =
11 78.6 x .04 =
12 2374 ÷ 26 =
13 .667 + .333 =
14 38.96 + 2.903 =
15 784 ÷ 16 =
16 83 x 2.4 =
17 9.84 - 3.6 =
18 2.97 ÷ 99 =
19 6.49 + 732.4 =
20 7.83 - .97 =
21 .38 - .309 =
22 5.75 + 1.25 =
23 12.5 ÷ 8 =
24 3.25 ÷ .25 =
25 42.6 + 2.08 =
26 71.42 = 321 =
27 .68 - .094 =
28 47.9 x 3.5 =
29 .52 x .48 =
30 .81 ÷ .9 =
31 4% of 125 =
32 32 is _____ % of 64
33 1½% of 67.50 =
34 ___% of 84 is 21
35 6½% of $6,750 =
36 $3.40 is ____% of $500
37 $680 06% =
38 238 + 4.29 =
39 4.28 ÷ 4 =
40 6.09 x 4.5 =
41 72 ÷ .8 =
42 .007 + .0008 =
43 60.4 - 3.06 =
44 .006 ÷ .02 =
45 .6 x .004 =
46 43 x .2 =
47 45 =____% of 150

For Fun

There are ten mathematical errors on this page. Find them.



300 sq. ft.



2.4 + 5.6 = 8

3 tons = 5000 lbs.

$5/4 \cdot 1/12 = 15/4$

$C = 2\pi R$

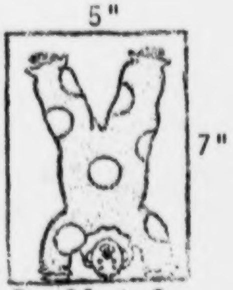
1 ft.5 in.=17 in.

-11 + -4 = -7

$4^3=64$

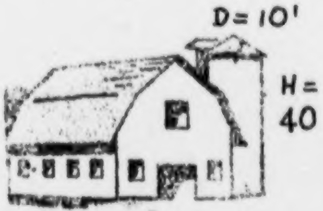
3 x 3 = 10

Length of bow = 2'



$P = 2l + 2w$

P = 25"

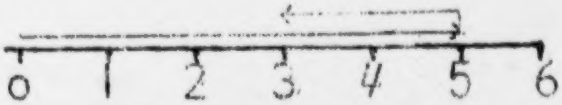


Surface Area of Silo: $A = \pi dh$

R = 3.6 x 10' x 40

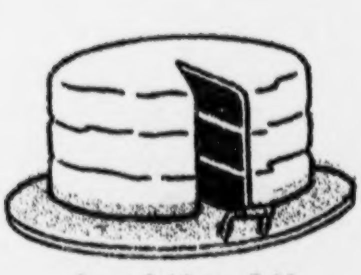
$1/4 \div 1/3 = 1/12$

1 ft. = 1/3 yd.



5 - 2 =

$$\begin{array}{r} 36.7 \\ 5.50 \\ .784 \\ \underline{6320} \\ 7.526 \end{array}$$

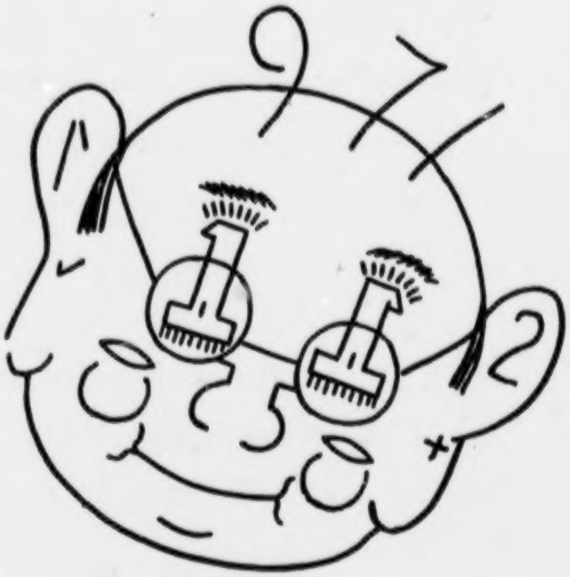


1 - 1/8 = 7/8

Area of Circle
diameter = 8"
A = 50.24"

Brain Teaser

The Pizza Party



1 ________

2 __________ Set had a party at the home of her parents, the 3 _________. When everyone arrived, she 4 __________ them with math 5 __________. She didn't have a date for the party because she was batting 6 ______ with her boy friend that week so she called him 7 ___________. For dinner they had 8 _______ ribs since it was a pizza party. All the glasses of Root Beer were full of Pepsi. The 9 ________ party was bound to be a big success! The difference between the boys and girls could be determined by the 10 ________ numbers and their 11 _________ and everyone knew their 12 __________ value, since there were only a few chairs.

The arrival of our instructor's wife, Eve Ann, with the professor himself, Mr. 13 _________, caused a moment of silence. Soon they were their old selves and the party went on. The professor and Eve Ann didn't 14 ____________ with any of the students because they were so involved with the 15 __________ at the serving table. The 16 _____ of the front door allowed only a 17 __________ of the noise to escape to the adjacent 18 __________. Miss 19 __________ made her entrance with a musical 20 __________. She has had much experience because her parents are 21 ____________ of show business, but they are now divided.

End

Fill the blanks with words from this list. For instance, No. 4 blank would be filled with the word "renamed." Words may be used only once or not at all.

associate
distributive
operations
opposites
products
property

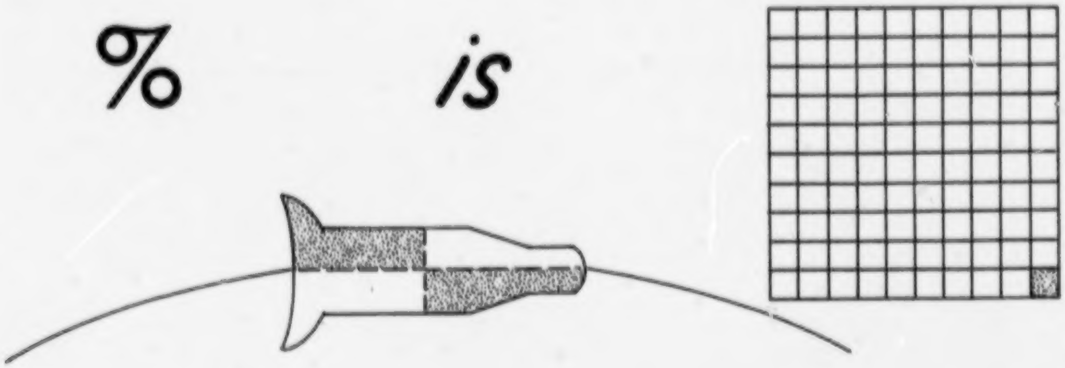
counting
fraction
identity
divided
renamed
symbols

added
end
null
odd
place
sets
number

closure
integer
prime
start
square
whole
zero

UNIT VII

PERCENTAGE



A. Student Investigation

Approximately what per cent of the nose cone is shaded? Another way of asking the same question would be: If the nose cone is mentally separated into 100 equal parts, how many of these parts are shaded? One of these 100 parts is 1/100 of the nose cone, or one per cent of it.

The symbol used for one per cent is %.

1/100 is the same as 1%

In the problem above, 100 equal parts would be hard to see! But it does appear that 1/2 of the nose cone is shaded.

Since 1/2 = 1/2 x 1 = 1/2 x 50/50 = 50/100 or 50 x 1/100, if

1% is substituted for 1/100 the answer is 50%.

Examples:

Change the following to %:

1. 3/4 = 3/4 x 1 = 3/4 x 25/25 = 75/100 = 75 x 1/100 = .75

   .75 = 75/100 = 75 x 1/100 = 75%

2. .025 = 2.5 x 1/100 = 2 1/2 percent.

3. $\frac{1}{8} = .125 = \frac{125}{1000} = \frac{125}{10} \cdot \frac{1}{100} = 12.5 \times \frac{1}{100}$

Therefore, $\frac{1}{8} = 12\frac{1}{2}$ per cent

Exercises

1. $\frac{1}{5} =$

2. $\frac{1}{2} =$

3. .83=

4. $\frac{6}{10} =$

5. .6=

6. $\frac{1}{20} =$

7. .04 =

8. .004 =

9. $\frac{1}{50} =$

10. .75 =

11. .075 =

12. $\frac{1}{12} =$

13. $\frac{17}{25} =$

14. $\frac{8}{20} =$

15. .008=

Change these per cents to decimals and then to fractions.

16. 40% ______, ______

17. 75% ______, ______

18. 12.5% ______, ______

19. 9.8% ______, ______

20. .1% ______, ______

21. 5% ______, ______

Exercises

Find the per cent of each number.

1. 82% of 350 = ____________
2. 6% of $39 = ____________
3. 75% of 2000 = ____________
4. 50% of 366 = ____________
5. 4.5% of 800 = ____________
6. 180% of 350 = ____________
7. 0.5% of 650 = ____________
8. 12½% of 1000 = ____________
9. $33\frac{1}{3}$% of 99 = ____________
10. ¼% of 100 = ____________

Find the rate of per cent.

1. 16 is ______% of 24
2. $.48 is ______% of $3.20
3. 25 is ______% of 75
4. 9 is ______% of 4
5. 5 is ______% of 2
6. 50 is ______% of 200
7. 36 is ______% of 100
8. 2 is ______% of 1
9. 27 is ______% of 99
10. 0.54 is ______% of 9

Find the missing numbers.

1. 28% of ______ = 7
2. 9% of ______ = 72
3. 54 is 3.6% of ______
4. 2¼% of ______ = 81
5. 60% of ______ = 46.8
6. 26.3% of ______ = 18.41
7. 0.25% of ______ = 2.5
8. ¼% of ______ = 6.25
9. 0.25% of ______ = 6.25
10. 100% of ______ = 100

Exercises

Matching

________	1. 25% of 95	a. 253.08	l. 12.215
________	2. 37% of 147	b. 4195.8	m. 26308
________	3. 82% of 1,125	c. 253.18	n. 543.9
________	4. 74% of 342	d. 623.96	o. 23.75
________	5. 44% of 749	e. 6239.6	p. 90.72
________	6. 19% of 3,284	f. 2375	q. .9072
________	7. 55% of 975	g. 922.50	r. 122.15
________	8. 63% of 666	h. 54.39	s. 32956
________	9. .7% of 1745	i. 92250	t. 536.25
________	10. .09% of 1008	j. 53625	u. 329.56
		k. 419.58	v. 9.072

Find the per cents and totals

1. 9% of 658 =

2. 21% of 658 =

3. 58% of 658 =

4. 7% of 658 =

5. 5% of 658 = ________

Total Total

Exercises

1. 181.47 = ______ % of 789

2. 47.34 = ______ % of 789

3. 197.25 = ______ % of 789

4. 86.79 = ______ % of 789

5. 42.02 = ______ % of 789

6. 134.13 = ______ % of 789

Total ______ Total ______

If 25% of 999 is 249.75, then 75% of 999 is 3(249.75) or 749.25.

Using this easy method, work these problems:

1. 33% of 100 is ______, thus 66% of 100 is ______
2. 56% of 88 is ______, thus 28% of 88 is ______
3. 40% of 95 is ______, thus 10% of 95 is ______
4. .6% of 125 is ______, thus 2.4% of 125 is ______

The Big Game

(Home) ____________ has the ball on the 50 yd. line heading toward (visiting)__________________'s goal.

You are the score keeper.

Here are your instructions:

a. The answer to each problem tells you the yardage made each play. If answer is positive, yards gained; if answer is negative, yards lost.

b. If answer is zero, there is a fumble and the other team recovers the ball.

c. A team has four downs to make 10 yards.

d. When a team makes enough yardage to reach the goal, they score. The other team gets the ball on the 50 yd. line.

e. No extra points are scored.

f. Use the chart on page 128 to keep up with the game.

1. $10626.0 \div 885.5 =$
2. $4427 \div -233 =$
3. $\frac{11}{4} \div \frac{22}{88} =$
4. 30% of $10 =$
5. $7{,}956 - (15912 \times .5) =$
6. 20% of $25 =$
7. $96714.7 \div 5689.1 =$
8. $\frac{5}{4} + \frac{7}{12} + 1 + \frac{1}{6} =$
9. $\frac{7}{16} - \frac{1}{2} + \frac{33}{16} =$
10. $119794.65 \div 7986.31 =$
11. $-7989.64 + 7969.64 =$

12. $\frac{1}{3} \times \frac{1}{4} - \left(\frac{1}{6} + \frac{11}{12}\right) =$

13. $\left(\frac{117}{15} \div \frac{9}{25}\right) - \frac{80}{3} =$

14. $(28 \times .25) \times 5 =$

15. $\frac{23}{3} + \frac{68}{6} =$

16. $4^2 =$

17. $.05 \times 700 =$

18. $11 \times \boxed{} = 121$

19. $(50 \times 2) - (100 \div 4) + {}^{-}70 =$

20. $\frac{1}{7} + \frac{1}{4} + {}^{-}\frac{1}{14} + \frac{-1}{2} + \frac{33}{28} =$

21. $\frac{2}{12} + \frac{-12}{72} + {}^{-}2 =$

22. $100 = \boxed{}^{\,2}$

23. $49 = 7 \times \boxed{}$

24. $144 = 2 \times 2 \times 2 \times 2 \times 3 \times \boxed{}$

25. $75 = 5 \times 3 \times \boxed{}$

26. 50% of 4 =

27. (5% of 40) - (.5 x 4) =

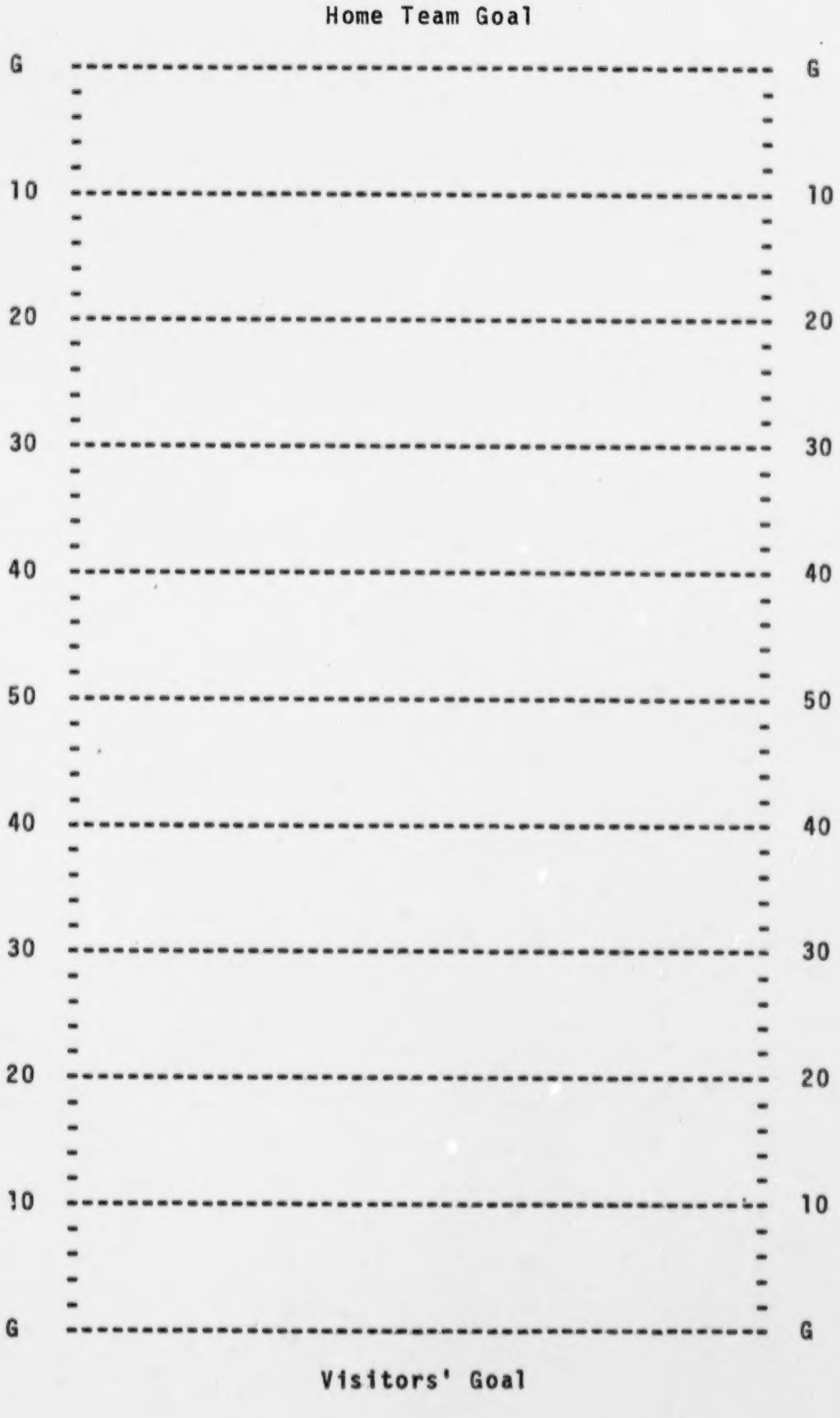
28. $34335444775 \div 512469325 =$

29. $2^4 =$

What is the final score?

What is the total yardage gained by the home team?__________
by the visiting team?__________

What is the total yardage lost by the home team?__________
by the visiting team?__________


Home Team Goal
G
G
Visitors' Goal

B. Interest

I = P x R x T

---

^

Interest = Principal x Rate X Time

$$\frac{\text{Interest}}{\text{Principal x time}} = \text{Rate}$$

$$\frac{\text{Interest}}{\text{Rate x Principal}} = \text{Time}$$

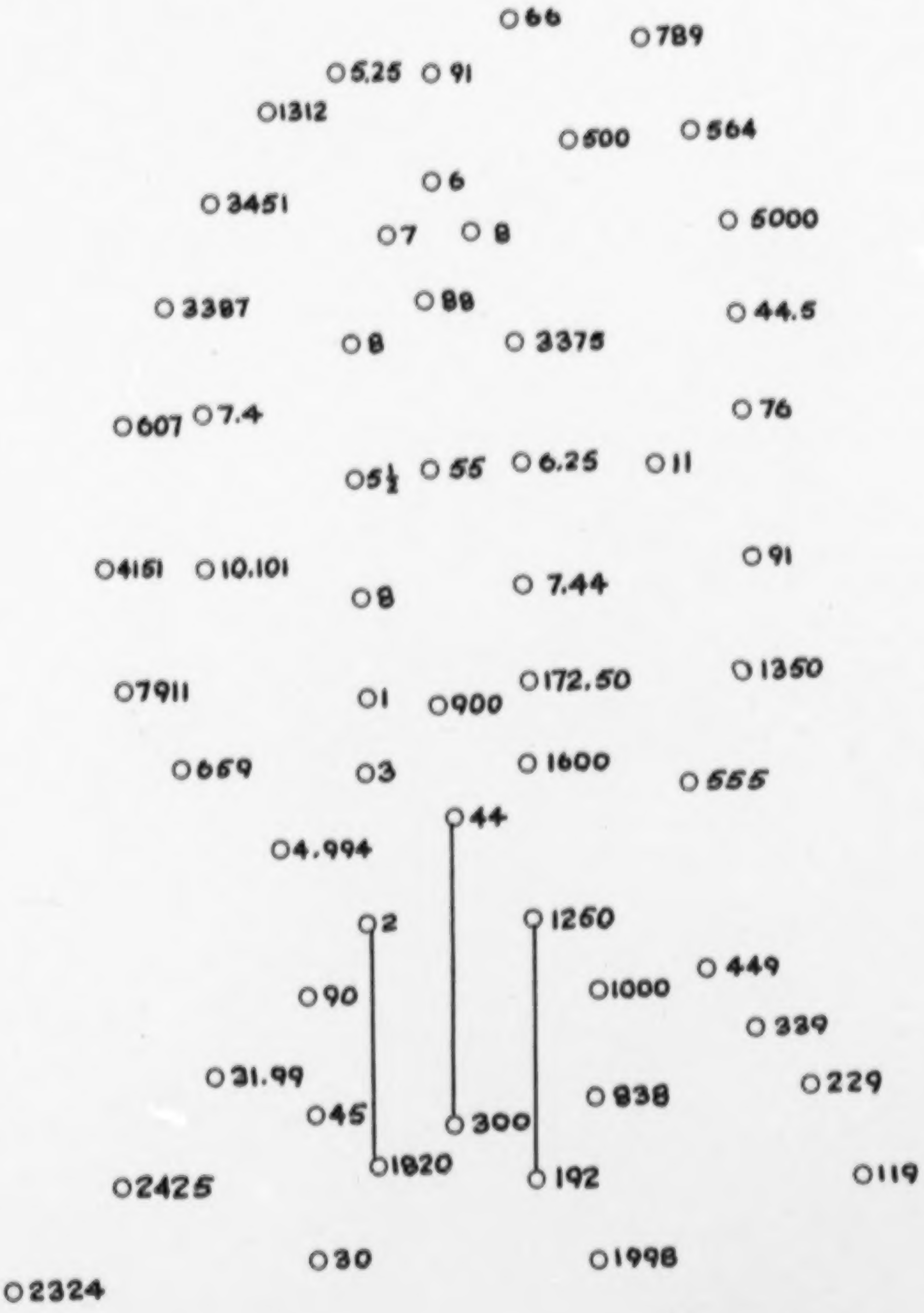
$$\frac{\text{Interest}}{\text{Rate x Time}} = \text{Principal}$$

Note: Time in the formula I = P x R x T is in years.

Exercises

Complete the picture on the following page by connecting the points which correspond to the answers of the problems below.

	Interest	Principal	Rate	Time
1.	$______	$25,000	5%	1 yr.
2.	______	10,000	8%	2 yrs.
3.	______	575	6%	5 yrs.
4.	______	425	7%	90 days
5.	______	750	5%	60 days
6.	______	25,000	4½%	3 yrs.
7.	1218.56	3,808	___%	4 yrs.
8.	96.00	800	___%	2 yrs.
9.	126.00	600	___%	3 yrs.
10.	15.00	1,500	___%	45 days
11.	52.25	1,900	___%	180 days
12.	3.33	500	___%	30 days
13.	48.00	600	8%	___yr.
14.	360.00	2,000	6%	___yr.
15.	20.80	520	2%	___yr.
16.	8.00	400	8%	___days
17.	14.70	2,352	5%	___days
18.	38.25	7,650	6%	___days
19.	163.80	$______	3%	3 yrs.
20.	12.00	______	2%	2 yrs.
21.	19.80	______	10%	1 yr.
22.	199.80	______	5%	2 yrs.
23.	335.20	______	8%	5 yrs.
24.	20.00	______	4%	180 days


66
789
5.25
91
1312
500
564
6
3451
7
8
5000
3387
88
44.5
8
3375
607
7.4
76
5½
55
6.25
11
4151
10.101
91
8
7.44
7911
1
900
172.50
1350
669
3
1600
555
44
4.994
2
1260
449
90
1000
339
31.99
229
45
300
838
1820
192
2425
119
30
1998
2324

Practical Application

SIMMONS FIRST NATIONAL BANK
Pine Bluff, Arkansas

In the following problems:
- Use 360 days to find daily interest.
- Find annual interest-rate.
- Divide annual interest by 360 days to find daily factor.
- Daily factor should be carried to thousandths.

For example:
$10,000 at 6% = $600
$600 ÷ 360 = $1.667 per day.

1. LOAN OF $15,000 at 6%.
   a. WHAT IS AMOUNT OF ANNUAL INTEREST? ____________
   b. WHAT IS DAILY FACTOR? ____________
   c. WHAT IS AMOUNT OF INTEREST FOR 66 DAYS? ____________
   d. LOAN MADE JULY 1, 1971 DUE WHEN? ____________

2. LOAN OF $200,000 AT 5 3/4% FOR 90 DAYS.
   a. WHAT IS AMOUNT OF ANNUAL INTEREST? ____________
   b. WHAT IS DAILY FACTOR? ____________
   c. WHAT IS THE AMOUNT OF INTEREST FOR 90 DAYS? ____________
   d. INTEREST WOULD BE ________ IF LOAN WAS $200. ____________
   e. LOAN MADE SEPTEMBER 5, 1971 DUE WHEN? ____________

C Commission

Commission = Base x Rate

Example: John's paper route:

Papers sold = 65

Price of each paper = 15¢

Rate of commission = 30%

John's commission = $\boxed{\$2.93}$

Exercises

1. Mr. Graves, insurance salesman:

Amount of Insurance sold: $2500
Rate of Commission: 15%

Mr. Graves' Commission: $\boxed{}$

2. Don Jackson, appliance salesman in large department store:

Sold $6,120 worth of appliances in one month:
Rate of Commission: 6%

Don's commission for that month: $\boxed{}$

3. John Greene: car salesman

Amount of sales - 1st week: $2400
Amount of sales - 2nd week: $ 900
Amount of sales - 3rd week: $2550
Amount of sales - 4th week: $2625

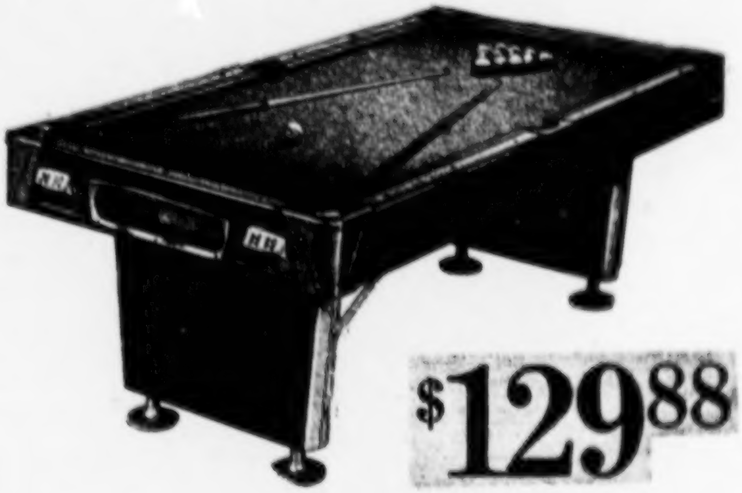
Rate of commission: 4%

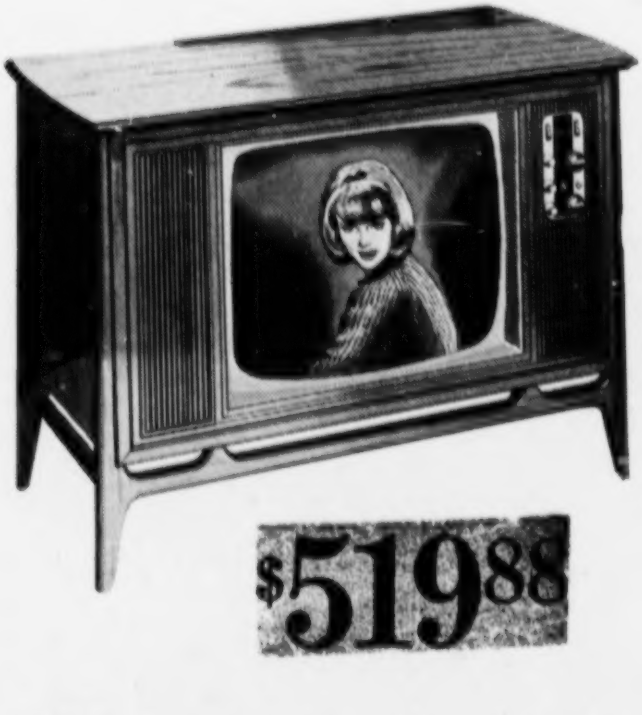
Total sales: $\boxed{}$

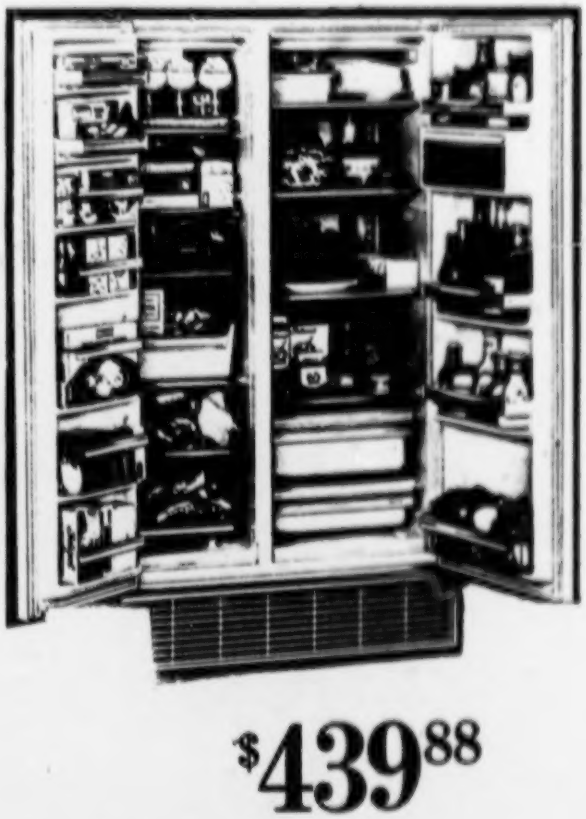
Total amount of commission: $\boxed{}$

Practical Application

DEAR ANN LANDERS: I am a salesman in a large department store. Like most salesmen of major items (furniture, rugs, jewelry, refrigerators, stoves, etc.) I work on commission. Last week I spent the better part of two days with three couples. They asked dozens of questions, which I was happy to answer. That's what I'm here for. I gave them my card and said if they decided to buy I'd be happy to help them. At the end of the week I followed up by telephoning these couples and all three told me they had been in the store and bought the item from someone who just happened to be standing there. They all added, "You aren't on commission are you?"







This man worked for a 5% commission. If the three couples bought these three items, how much commission did he lose on each sale? What would have been his earnings if he had made the sales? Note: Each couple purchased only one item.

D. Discount

Discount = Selling price X Rate

Example: Judy buys a sweater:

Selling price = $8.95

Rate of discount = 20%

Amount of discount = $1.79

Judy's Price = $ 7.16

Exercises

1. Phillip buys a 12 hp. boat motor:

Selling price = $380.25

Rate of discount = 10%

Amount of discount = $

Phillip's price = $

2. Jim is buying a new Plymouth V.I.P.

Selling price = $4250

Rate of discount = 15%

Amount of discount = $

Jim's price = $

3. Phyllis is buying ten 33 1/3 rpm stereo records.

Selling price = $5.98 each

Rate of discount = 30%

Amount of discount = $

Phyllis' price = $

Exercises

	Retail Price	Rate of Discount	Amount Discount	Sale Price
1.	$ 2,400			$1,920
2.	$ 18.75			18.00
3.	$ 15.00			11.25
4.	$100.00			95.50
5.	$800.00			768.00
6.	$ 1.44			.84
7.	$ 16.00			15.00
8.	$ 75.00			70.00
9.	$ 32.00			28.00
10.	$ 80.00			68.00
11.	$175.00			140.00
12.	$ 4.50			4.00

Exercises

	Retail Price	Rate of Discount	Amount of Discount	Sale Price
1.	$ .50	25%	__________	______
2.	$900.00	33%	__________	______
3.	$ 8.59	40%	__________	______
4.	$ 50.55	75%	__________	______
5.	$ 19.00	24%	__________	______
6.	$ 23.98	66%	__________	______
7.	$ 34.88	10%	__________	______
8.	$146.10	20%	__________	______
9.	$ 6.90	1/3 off	__________	______
10.	$198.88	30%	__________	______
11.	$ 12.95	1/4 off	__________	______
12.	$ 11.75	15%	__________	______

Northside High S[illegible]letic Department

North 23rd and B Streets Fort Smith, Arkansas

COST OF SUITINGS:

	list price	team price
1 pair shoulder pads	$24.50	$16.95
1 helmet	33.50	24.95
1 pair football shoes	30.00	24.95
1 pair football pants	28.50	20.95
1 jersey	18.50	13.95
1 pair Grizzly Bear emblems	1.25	0.95
Total	______	______

Using list price and team price, figure the rate of discount and the amount of discount.

Amount of Disc. % of Discount

A. ____________ on shoulder pads . . . . . . ____________

B. ____________ helmet . . . . ____________

C. ____________ shoes . . . . ____________

D. ____________ pants . . . . ____________

E. ____________ jersey . . . . ____________

F. ____________ emblems . . . . ____________

Each year 32 boys are fitted with new equipment. Figure the cost at list price then at team price.

List Price Team Price

Shoulder Pads ____________ . . . . ____________

Helmets . . . ____________ . . . . ____________

Shoes . . . . ____________ . . . . ____________

Pants . . . . ____________ . . . . ____________

Jerseys . . . ____________ . . . . ____________

Emblems . . . ____________ . . . . ____________

STERLING STORES COMPANY, INC

1. Fourth of July Sale

beach towels (were $1.98) 40% off

stereo LP records (were $3.89) 1/3 off

candy (was .79 per lb.) 25% off

Nancy bought	sale price	total price
2 beach towels	______	______
4 stereo LP records	______	______
3 lb. candy	______	______
	total	______
	3% tax	______
	total	______

How much did Nancy save? ______

2. Joe Payne's Dance Contest

First Prize - Stereo Tape Cartridge Player

How much was saved? ______

What was the rate of discount? ______

Exercises

1.	List Price	Discounts	Net Price
a.	$75.00	20%, 12½%	____________
b.	$75.00	20% + 12½%	____________

Did you get the same result for both methods?

Note: In successive discounts the discount rates must not be added together.

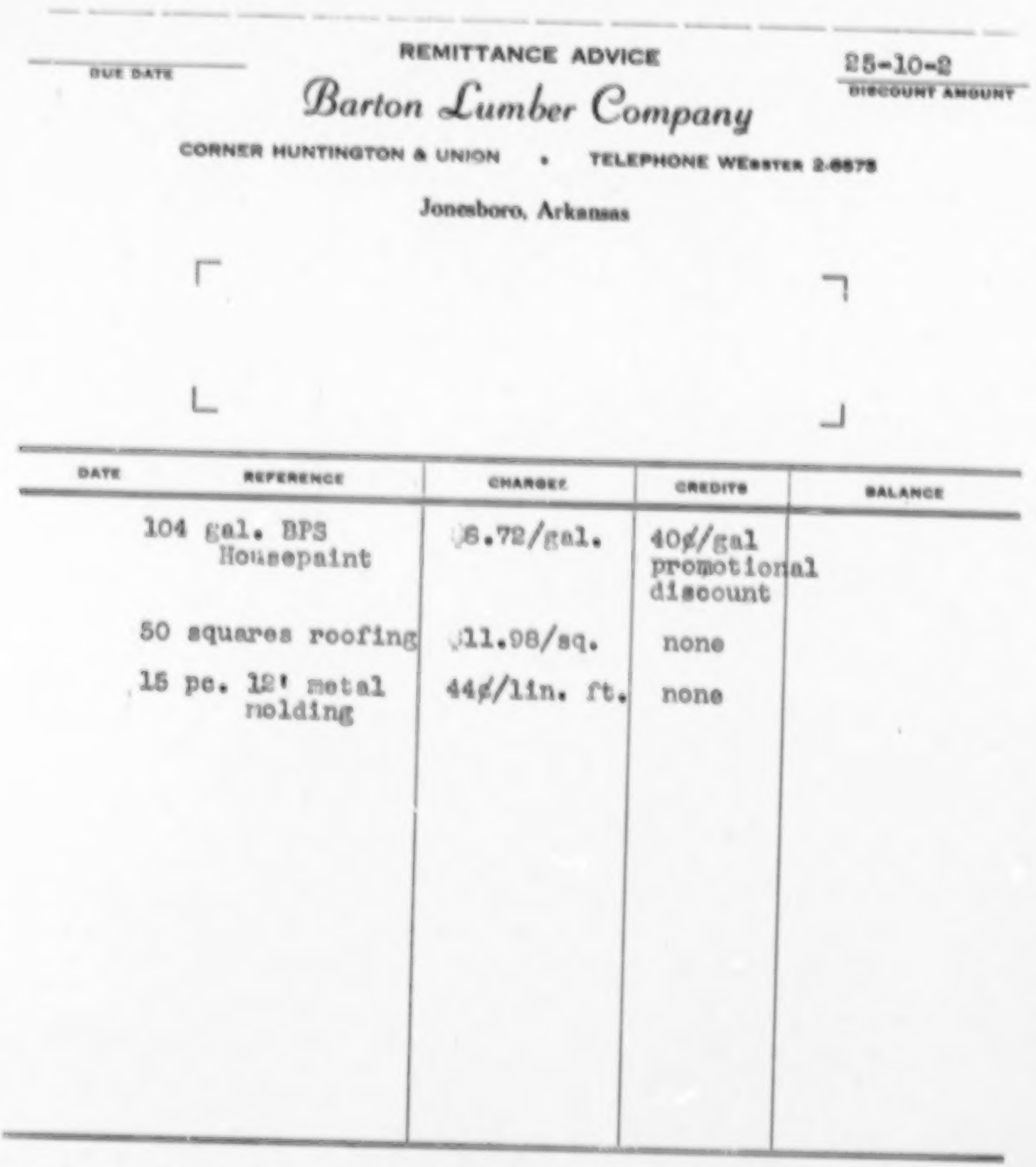
2.	List Price	Discounts	Net Price
a.	$18.50	10%, 5%	____________
b.	$923.00	30%,25%,15%	____________
c.	$40.16	50%,20%,10%	____________
d.	$27.60	33 1/3%,25%	____________
e.	$117.00	20%,15%,5%	____________

3. A store offers a motor bike for $450 less discounts of 20% and 10%. Another store offers the same bike at $475 less 25% and 10% discounts.

   Which one would you buy?

4. Which would you rather buy, a stereo priced at $225.00 with discounts of 25%, 20%, 12½%, or the same stereo with a single discount of 50%?

Practical Application



DUE DATE

REMITTANCE ADVICE

25-10-2
DISCOUNT AMOUNT

Barton Lumber Company

CORNER HUNTINGTON & UNION • TELEPHONE WEBSTER 2-6675

Jonesboro, Arkansas

DATE	REFERENCE	CHARGES	CREDITS	BALANCE
	104 gal. BPS Housepaint	$6.72/gal.	40¢/gal promotional discount	
	50 squares roofing	$11.98/sq.	none	
	15 pc. 12' metal molding	44¢/lin. ft.	none	

Use the name of any building contractor in your town as the buyer. Assume you are the bookkeeper for the contractor. Find the balance after successive discounts for each item. What is the total amount of the order before sales tax is added?

E. Taxes

Exercises

1. Sales Tax - Arkansas 3%

Schedules: .00 - .14 no tax .15 - .44 1¢
.45 - .74 2¢ .75 -1.14 3¢

Purchase	Sales Tax
a. $ 17.74	________
b. $ 33.95	________
c. $295.00	________
d. $ 8.98	________
e. $ 0.50	________
f. $ 0.88	________
g. $1487.98	________
h. $ 2.39	________

2. School Millage (rate varies by school districts)

e.g.			
Jonesboro	49 mills	Hope	40 mills
Lepanto	45 mills	Ft. Smith	49 mills
Wynne	49 mills	Little Rock	51 mills

49 mills = $4.90 tax per $100. assessed evaluation
Arkansas Law: assessed value = 20% real value.

Assessed Evaluation	Millage	School Tax
a. $650.	49	________
b. $85.	45	________
c. $1175.	40	________
d. $1720.	51	________
e. $210.	49.5	________

3. Gas Tax-Federal: 4¢ gallon State: 7 1/2¢ gallon
(Taxes included in pump price. No sales tax extra)

Purchase	Pump Price	Total	Federal Tax	State Tax
a. 14.3 gal.	30.9	____	________	________
b. 5.0 gal.	32.9	____	________	________
c. 19.7 gal.	32.9	____	________	________
d. 11.4 gal.	34.9	____	________	________
e. 16.5 gal.	31.9	____	________	________

4. Cigarette Tax: Federal - 4¢ per pack
Arkansas - 17 3/4¢ per pack

Carton Price: $4.25 How much of this is tax?________
What is the price per pack?______

5. Telephone Tax: Federal 10% State 3%
(No state tax on out-of-state long distance calls)

a.

Monthly rental (single line)	$5.80
Long distance call to Little Rock	1.90
Long distance call to Memphis	.85
Long distance call to St. Louis	2.20
Long distance call to Dallas	4.65
Long distance call to Fayetteville	2.63
Sub Total	
Federal Tax	______
State Tax	______
Total	______

b. What would be the amount of the statement if no long distance calls were made?

6. Personal Property and Real Property Tax.

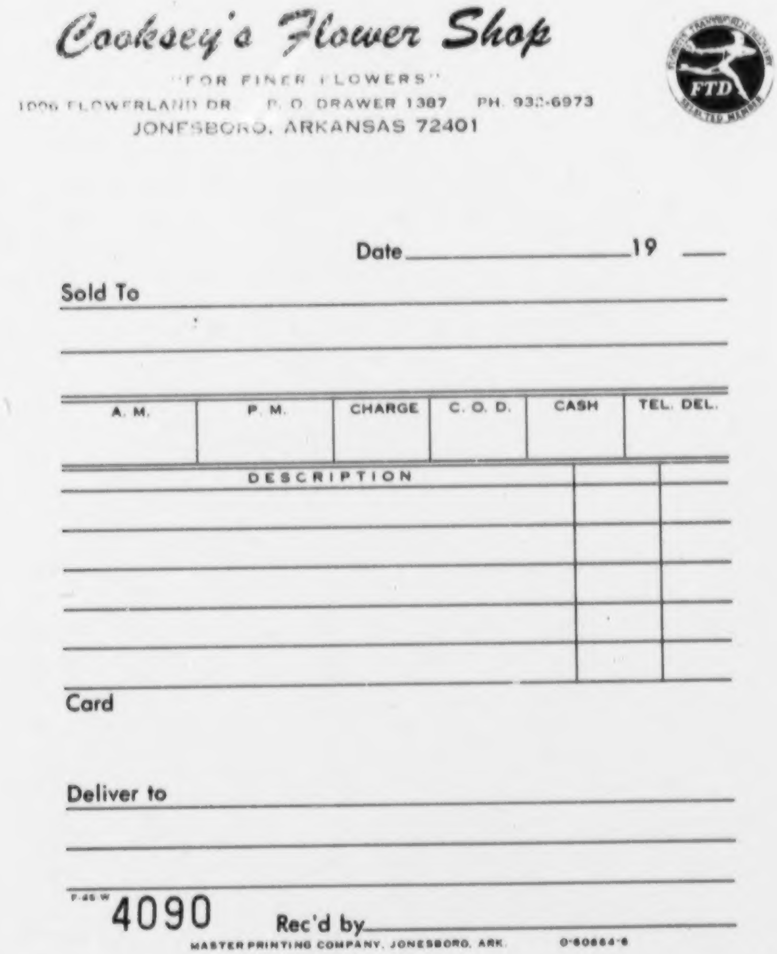
	Mills on assessed value		
School Tax	49	rural	city
County Tax	5		
County Library Tax	1		
County Road Tax	3		
County Hospital Tax	4.2		
Courthouse Bonds	.8		
City Tax	5		
Firemen's Pension	.25		
Police	1		

Arkansas Law: assessed value = 20% real value

Jim owns: a. In city:
Home $11,500 Value
Furniture 5,000 Value
Car 2,225 Value
Total ____________
Assessed Value ____________

b. Outside city:
40 acre farm
$8,500 Value
Assessed Value ________

c. What is the total assessed value? ____________
d. What is the city tax rate? ____________
e. What is the farm tax rate? ____________
f. What is the total city taxes? ____________
g. What is the total farm taxes? ____________
h. What were the total taxes paid? ____________
i. How much did Jim pay in school taxes? ____________
j. How much did Jim pay to support the county library? ________
k. How much did he pay to support the city administration?
____



Cooksey's Flower Shop

"FOR FINER FLOWERS"

1006 FLOWERLAND DR.   P. O. DRAWER 1387   PH. 932-6973

JONESBORO, ARKANSAS 72401

Date ______________ 19 ___

Sold To ______________________________

A. M.	P. M.	CHARGE	C. O. D.	CASH	TEL. DEL.

DESCRIPTION		

Card

Deliver to ______________________________

F-46 W 4090   Rec'd by ______________________

MASTER PRINTING COMPANY, JONESBORO, ARK.   0-60864-6

Mrs. A. A. Rudd bought a container for $5.98, 6 chiffon roses at 65 cents each, 3 pineapple blossoms at 65 cents each, and 1 can of spray paint for $1.15. What was her total bill including tax? Write the sales ticket.

F. Mark-Up

Mark-Up = Selling Price - Cost

% Mark-up (Based on cost) = $\frac{\text{Amount of mark-up}}{\text{Cost}}$ Change to %

% Mark-up (Based on selling price) = $\frac{\text{Amount of mark-up}}{\text{Selling Price}}$ Change to %

Example: Pork & Beans:

Selling Price = 15¢

Cost per can = 11¢

Mark-up = 4¢

% mark-up on selling price = 26.7%

% mark-up on cost = 36.4%

Exercises

1. A grocer buys butter at 62¢ a pound and sells it at 73¢ a pound.
   a. Find the mark-up.
   b. What percent of cost is the mark-up?
   c. What percent of the selling price is the mark-up?

2. Copy and complete the table, then find the percent of mark-up on the selling price and cost.

	Cost	Selling Price	Mark-up (Margin)	%mark-up on Selling Price	%mark-up on Cost
a.	$ .45	$ .60	______	______	______
b.	$ .84	$ 1.05	______	______	______
c.	$ 2.50	$ 2.75	______	______	______
d.	$ 3.75	$ 4.50	______	______	______
e.	$20.00	$23.00	______	______	______

G. Per Cent Increase or Decrease

Exercises

$$\% \text{ of Increase} = \begin{matrix}\text{Amount of}\\ \text{Increase}\end{matrix} \div \text{Original}$$

Change answers to per cents:

1. Mrs. Riddle buys an air conditioner this year:

Price last year = $300

Price this year = $400

Amount of increase =

Per cent of increase =

$$\% \text{ of Decrease} = \begin{matrix}\text{Amount of}\\ \text{Decrease}\end{matrix} \div \text{Original}$$

2. Mary goes to buy gasoline:

Original price 41.9¢ per gallon

Present price 32.9¢ per gallon

Amount of decrease =

Per cent of decrease =

3. Color TV

Price last year =
Price this year = $475
Amount of decrease = $145
Per cent of decrease =

4. Belinda Adams: Secretary

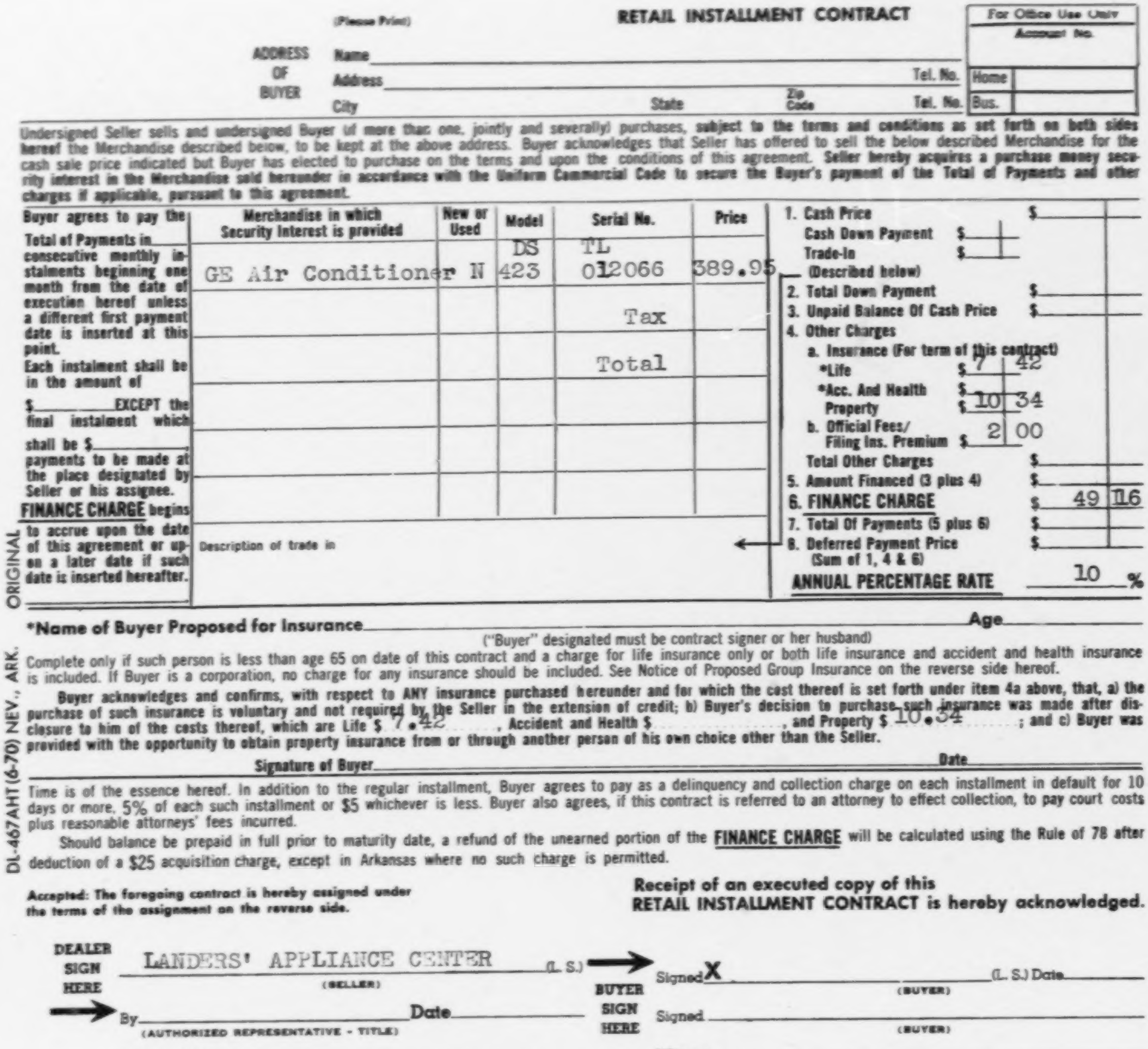
Salary last year = $3,400
Salary this year = $3,900
Amount of increase =
Per cent of increase =

5. Short Cut Check

Checking multiplication by casting out 9's

Check problems "b" and "c" as "a" is checked.

```
a.  235     1          b.  621          c.  725
     66   x 3              237              527
   1410     3
  1410
  15510     3
```



(Please Print)

RETAIL INSTALLMENT CONTRACT

For Office Use Only
Account No.

ADDRESS OF BUYER
Name
Address ... Tel. No. Home
City ... State ... Zip Code ... Tel. No. Bus.

Undersigned Seller sells and undersigned Buyer (if more than one, jointly and severally) purchases, subject to the terms and conditions as set forth on both sides hereof the Merchandise described below, to be kept at the above address. Buyer acknowledges that Seller has offered to sell the below described Merchandise for the cash sale price indicated but Buyer has elected to purchase on the terms and upon the conditions of this agreement. Seller hereby acquires a purchase money security interest in the Merchandise sold hereunder in accordance with the Uniform Commercial Code to secure the Buyer's payment of the Total of Payments and other charges if applicable, pursuant to this agreement.

Buyer agrees to pay the Total of Payments in ______ consecutive monthly instalments beginning one month from the date of execution hereof unless a different first payment date is inserted at this point. ______ Each instalment shall be in the amount of $______ EXCEPT the final instalment which shall be $______, payments to be made at the place designated by Seller or his assignee. **FINANCE CHARGE** begins to accrue upon the date of this agreement or upon a later date if such date is inserted hereafter.

Merchandise in which Security Interest is provided	New or Used	Model	Serial No.	Price
GE Air Conditioner	N	DS 423	TL 012066	389.95
			Tax	
			Total	

Description of trade in

1. Cash Price $
   Cash Down Payment $
   Trade-In $
   (Described below)
2. Total Down Payment $
3. Unpaid Balance Of Cash Price $
4. Other Charges
   a. Insurance (For term of this contract)
      *Life $ 7 42
      *Acc. And Health $
      Property $ 10 34
   b. Official Fees/ Filing Ins. Premium $ 2 00
   Total Other Charges $
5. Amount Financed (3 plus 4) $
6. **FINANCE CHARGE** $ 49 16
7. Total Of Payments (5 plus 6) $
8. Deferred Payment Price (Sum of 1, 4 & 6) $

ANNUAL PERCENTAGE RATE 10 %

ORIGINAL

DL-467AHT (6-70) NEV., ARK.

***Name of Buyer Proposed for Insurance** ______ Age ______
("Buyer" designated must be contract signer or her husband)

Complete only if such person is less than age 65 on date of this contract and a charge for life insurance only or both life insurance and accident and health insurance is included. If Buyer is a corporation, no charge for any insurance should be included. See Notice of Proposed Group Insurance on the reverse side hereof.

Buyer acknowledges and confirms, with respect to ANY insurance purchased hereunder and for which the cost thereof is set forth under item 4a above, that, a) the purchase of such insurance is voluntary and not required by the Seller in the extension of credit; b) Buyer's decision to purchase such insurance was made after disclosure to him of the costs thereof, which are Life $ 7.42, Accident and Health $ ______, and Property $ 10.34; and c) Buyer was provided with the opportunity to obtain property insurance from or through another person of his own choice other than the Seller.

Signature of Buyer ______ Date ______

Time is of the essence hereof. In addition to the regular installment, Buyer agrees to pay as a delinquency and collection charge on each installment in default for 10 days or more, 5% of each such installment or $5 whichever is less. Buyer also agrees, if this contract is referred to an attorney to effect collection, to pay court costs plus reasonable attorneys' fees incurred.

Should balance be prepaid in full prior to maturity date, a refund of the unearned portion of the **FINANCE CHARGE** will be calculated using the Rule of 78 after deduction of a $25 acquisition charge, except in Arkansas where no such charge is permitted.

Accepted: The foregoing contract is hereby assigned under the terms of the assignment on the reverse side.

Receipt of an executed copy of this RETAIL INSTALLMENT CONTRACT is hereby acknowledged.

DEALER SIGN HERE LANDERS' APPLIANCE CENTER (L.S.)
(SELLER)
By ______ Date ______
(AUTHORIZED REPRESENTATIVE - TITLE)
Seller's Address ______

BUYER SIGN HERE
Signed X ______ (L.S.) Date ______
(BUYER)
Signed ______
(BUYER)
Witness ______

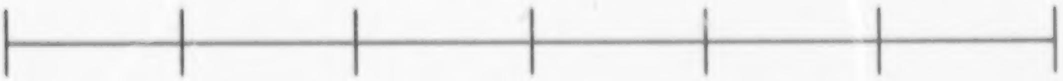
Judy, will you complete this contract for me. He has no trade-in and wants to pay $51.65 down and the balance in 30 months. I have already figured insurance and finance charges from the charts.

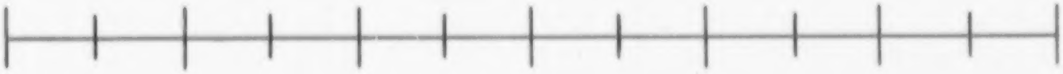
UNIT VIII
MEASUREMENT

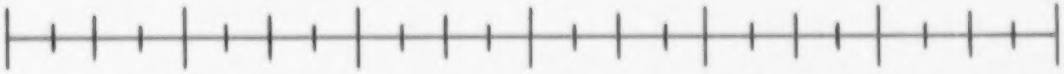
A. Linear Measurement

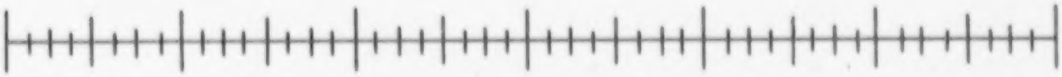
Exercises

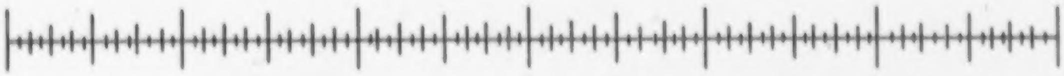
Label the points on these rulers:

1. 

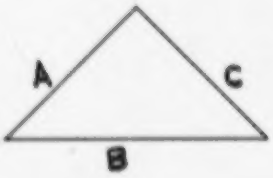
2. 

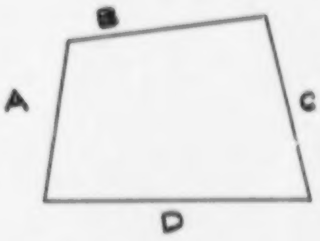
3. 

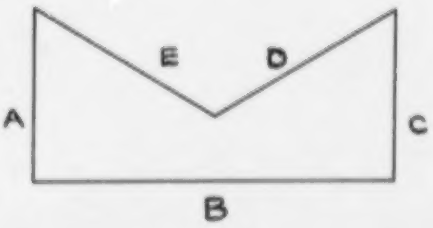
4. 

5. 

6. **Find the length of each side and the total distance around each figure.**







Exercises

1. How many $\frac{1}{2}$ inches are in:

a. 1" __________ b. 2" __________

2. How many $\frac{1}{8}$ inches are in:

a. 1" __________ b. $\frac{1}{2}$"

3. How many $\frac{1}{16}$ inches are in:

a. $\frac{1}{8}$" b. $\frac{1}{4}$"

c. $\frac{1}{2}$" __________ d. 1" __________

4. How many $\frac{1}{4}$ inches are in:

a. 2" __________ b. $\frac{3}{4}$" __________

c. 1" __________ d. $\frac{1}{2}$" __________

5. Locate the following points on ruler.

a. $2\frac{1}{2}$" b. $4\frac{1}{16}$" c. $2\frac{3}{4}$"

d. $3\frac{9}{16}$" e. $3\frac{3}{8}$" f. $5\frac{7}{16}$"

g. $5\frac{3}{4}$" h. $\frac{7}{8}$" i. $4\frac{15}{16}$"

STERLING STORES COMPANY, INC.

1. One of the most common problems in this store is figuring fractions when a product is measured in yards.

    a. A customer buys 1 3/4 yds. of lace at 29¢ a yard. Find the price. ________

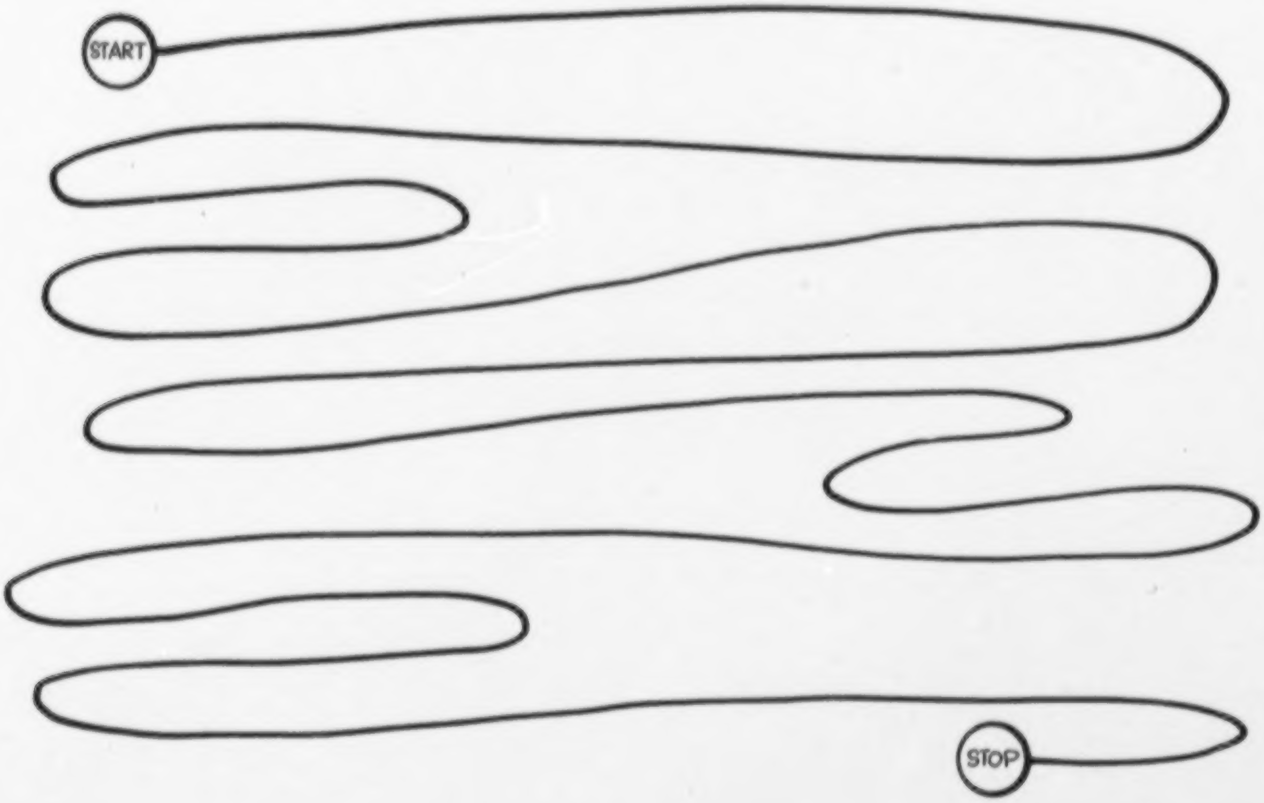
    b. Another problem is that in our candy department a customer will ask for 25¢ worth of candy that sells for 80¢ per pound. How many ounces will the customer get? ________

2. a. Make a guess in inches. The length from start to stop is ________.

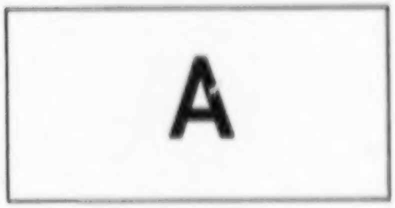
    b. Now measure in inches! The length from start to stop is ________.

    c. What is the amount of error? ________

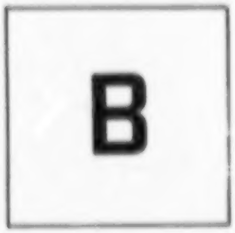
$$\text{per cent of error} = \frac{\text{amount of error}}{\text{distance measured}}$$



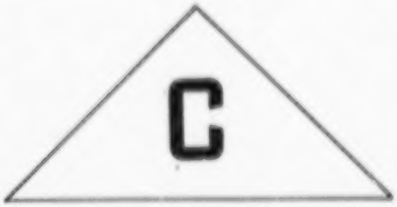
Exercises



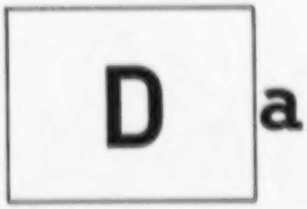
1. Figure A is a swimming pool:
   Width: 40'
   Length: 90'
   If you swim around the pool,
   how far do you swim? __________



2. Figure B is a __________ .
   Describe it. Measure the sides.
   The perimeter of a figure like
   B is 144 ft. Each side has a
   length of __________ .



3. Figure C is a __________ .
   Describe it. Measure its sides.
   The perimeter of a figure like C
   is 135 ft. The length of the
   sides could be __________ .



4. Figure D is a ________ . How
   would you describe it? Measure
   all four sides. The perimeter of
   a like figure is 140 ft. Side a
   is 20 ft. long. Can you find the
   lengths of the other three sides?

Exercises

1.

C	D	π (approx.)
31.4 in.	10 in.	3.14
131.88 in.		3.14
	28 ft.	

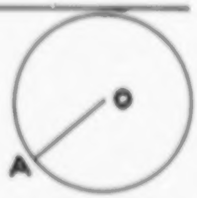
2. What is another way of finding the circumference of a circle other than measuring? Explain. Using c to represent circumference, D for diameter and 3.14 for π write the rule for the circumference of a circle.

Rule 1.

3. Use this rule to find the circumference of each circle with the given diameter.

   a. Diameter 8 inches ________
   b. Diameter 63 miles ________
   c. Diameter 8 3/4 inches ________
   d. Diameter 2.5 yards ________

4. a. Measure diameter in inches. ________
   b. Measure A to O. ________
   c. How does this last length compare to the length of the diameter? ________
   d. What is the length from O to A called? ________
   e. Restate the rule above using R for the length of OA.



Rule 2.

5. Use Rule 2 to find the circumference of each circle with the radius given.

   a. Radius 9 feet ________
   b. Radius 14 inches ________
   c. Radius 3.75 miles ________
   d. Radius 2 1/3 yards ________
   e. Radius 2 feet 4 inches ________

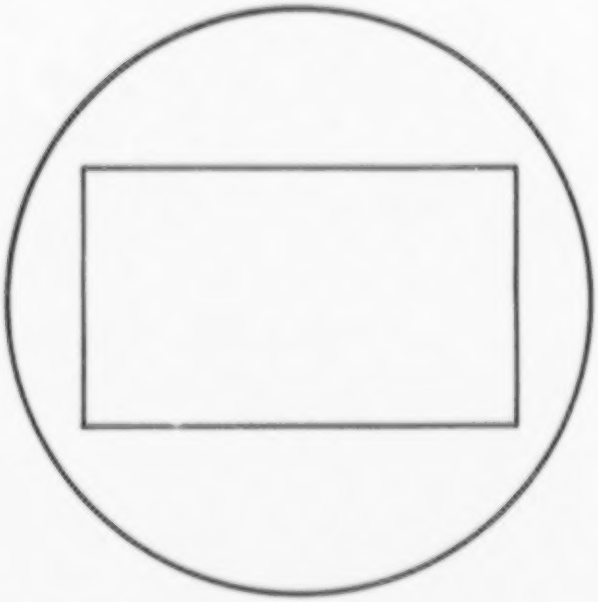
6. What distance in feet does the tip of a propeller travel in one revolution if its length (diameter) is 7 feet? ________

7. The circumference of a tree is 5 feet 6 inches. What is the diameter of the tree? ________

Azalea

29¢ EACH

Practical Application



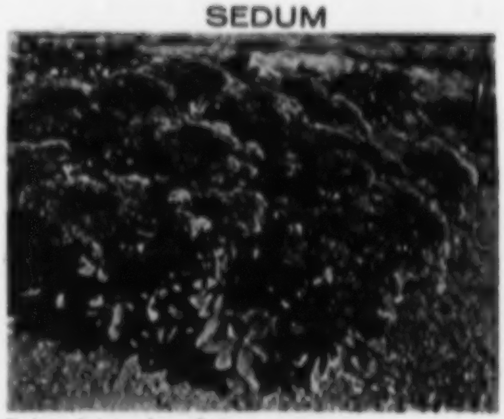
A beautification committee wants to build a circular flower bed with a frog pond in the middle of the bed. The circular bed is to have a 10' radius. The rectangular pond is to be 3' by 5'. They will plant azaleas on the circle 1' apart and around the pond they will plant sedum every 8". What will be the cost of the plants?

Optional:

How much would it cost to plant grass in the space between the two flower beds?

One bag of sprigs cost $2.25 and plants 300 Sq. ft. with rows 12" apart and sprigs 6" apart in the row.

SEDUM

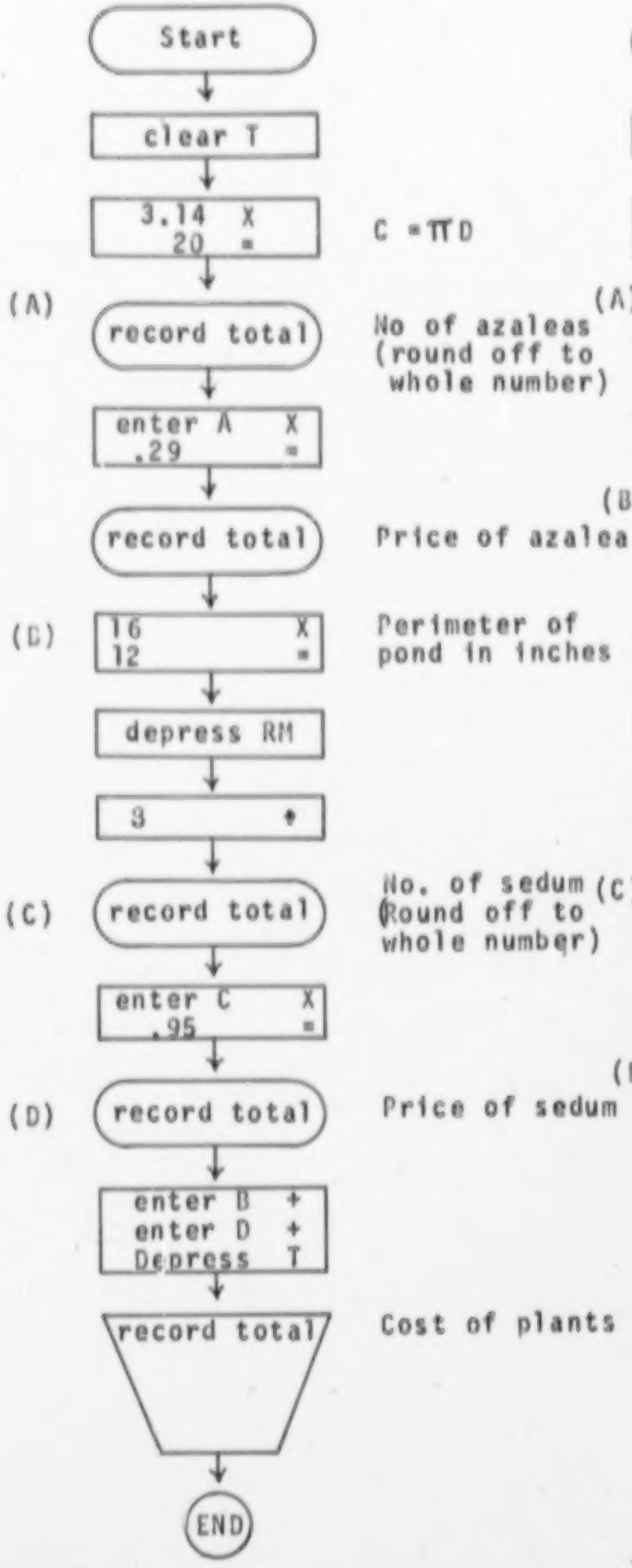


Sedum, Autumn Joy, above

Select Plants, Each 95c,

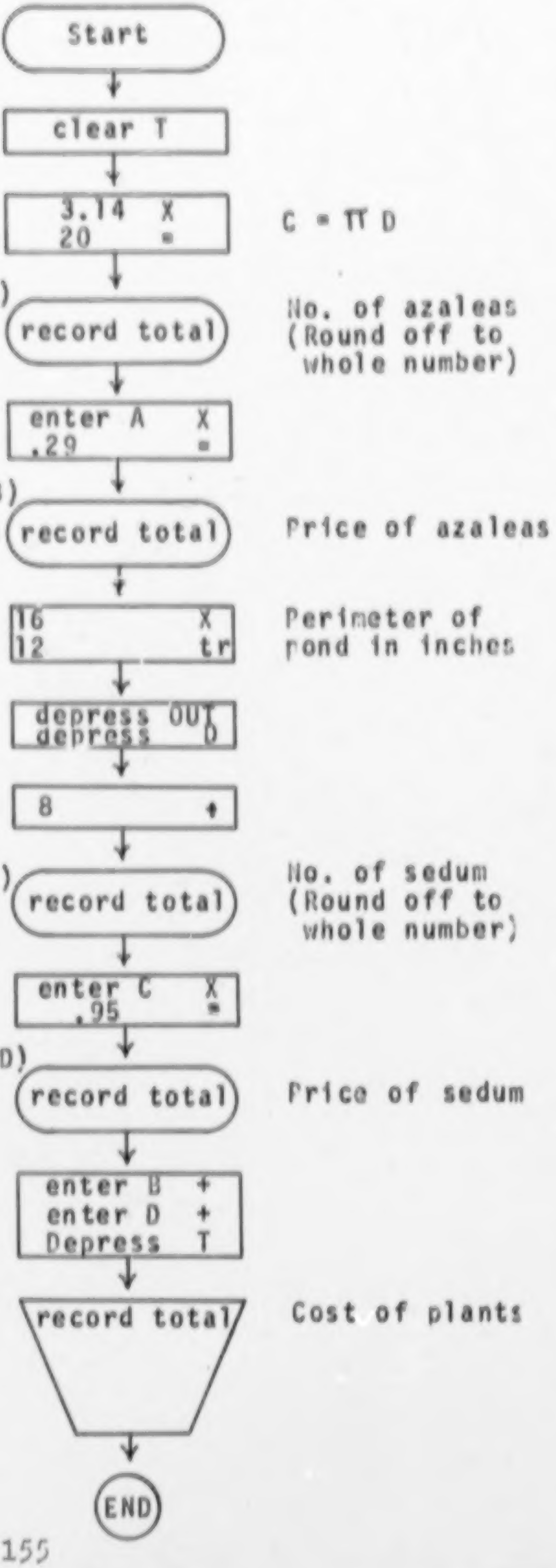
FLOW CHARTS FOR AZALEAS

(For Totalia Calculator)



Start
clear T
3.14 X
20 =
C = πD
(A)
record total
No of azaleas
(round off to
whole number)
enter A X
.29 =
record total
Price of azalea
(B)
16 X
12 =
Perimeter of
pond in inches
depress RM
3 ÷
(C)
record total
No. of sedum
(Round off to
whole number)
enter C X
.95 =
(D)
record total
Price of sedum
enter B +
enter D +
Depress T
record total
Cost of plants
END

(For Ollivetti Calculator)



Start
clear T
3.14 X
20 =
C = π D
(A)
record total
No. of azaleas
(Round off to
whole number)
enter A X
.29 =
(B)
record total
Price of azaleas
16 X
12 tr
Perimeter of
pond in inches
depress OUT
depress D
8 ÷
(C)
record total
No. of sedum
(Round off to
whole number)
enter C X
.95 =
(D)
record total
Price of sedum
enter B +
enter D +
Depress T
record total
Cost of plants
END

SUNRAY D. X. OIL CO.

Example: What size sheave should be placed on a motor which runs @225 R.P.M. in order to drive a 24" sheave @160 R.P.M.?

$$\text{P.D. of Eng. Sheave} = \frac{\text{Sheave Die x RPM}}{\text{Engine RPM}} = \frac{24 \times 160}{225}$$

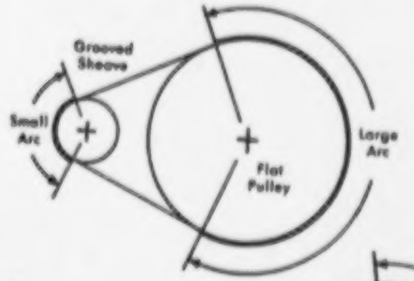
$$\frac{3840}{225} = 17"$$

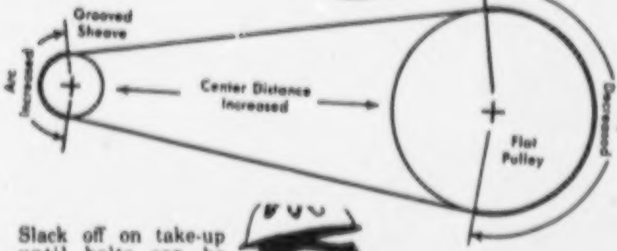
Problem: What size sheave should be placed on a motor which runs @325 R.P.M. in order to drive a 24" sheave @180 R.P.M.?

Example: Find approximate belt length needed where the diameter of the big sheave is 40", the diameter of a small sheave is 15", and the center distance between sheaves is 72".

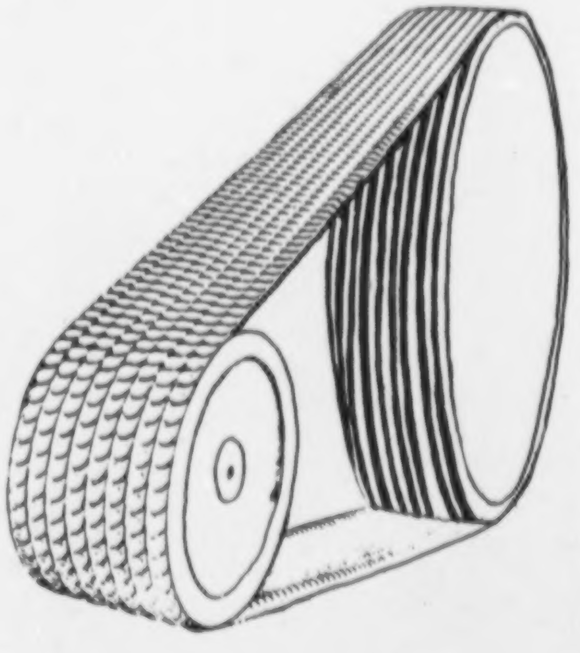
$$BL = (D + d) \times 1.57 + 2C = 55 \times 1.57 + 2\ (72") = 230.35"$$

Problem: Find approximate belt length needed where diameter of big sheave is 60", diameter of small sheave is 20", and center distance between sheaves is 84".


Grooved Sheave
Small Arc
Large Arc
Flat Pulley


Grooved Sheave
Arc Increased
Center Distance Increased
Arc Decreased
Flat Pulley

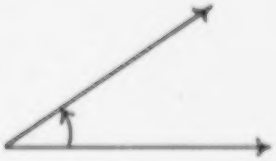
Slack off on take-up until belts can be placed in grooves without forcing.



B. Angle Measurement

Exercises

Use your protractor to measure these angles.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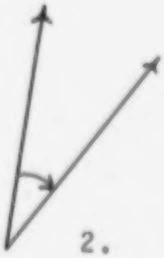
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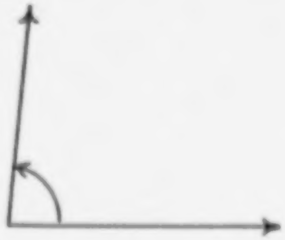
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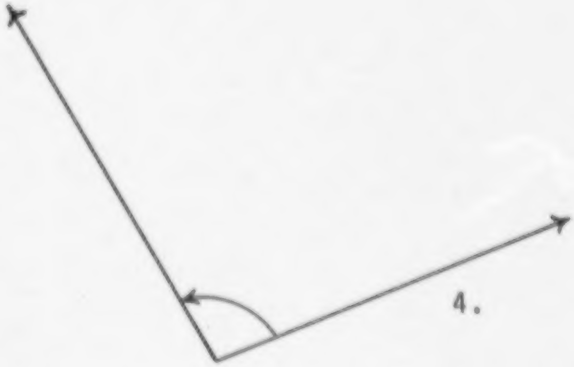
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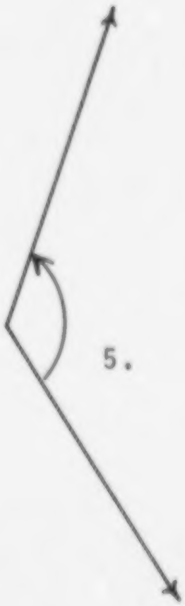
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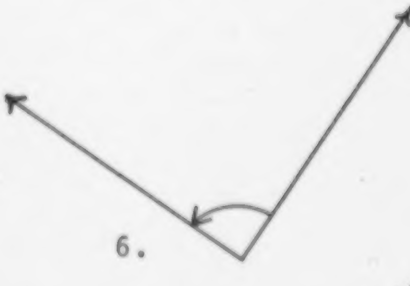
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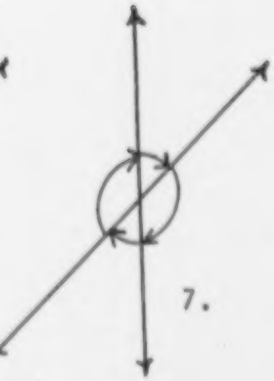
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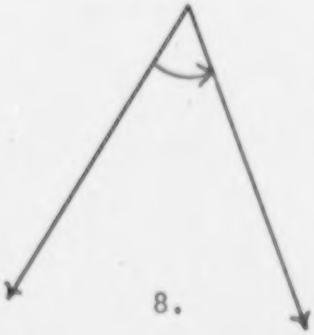
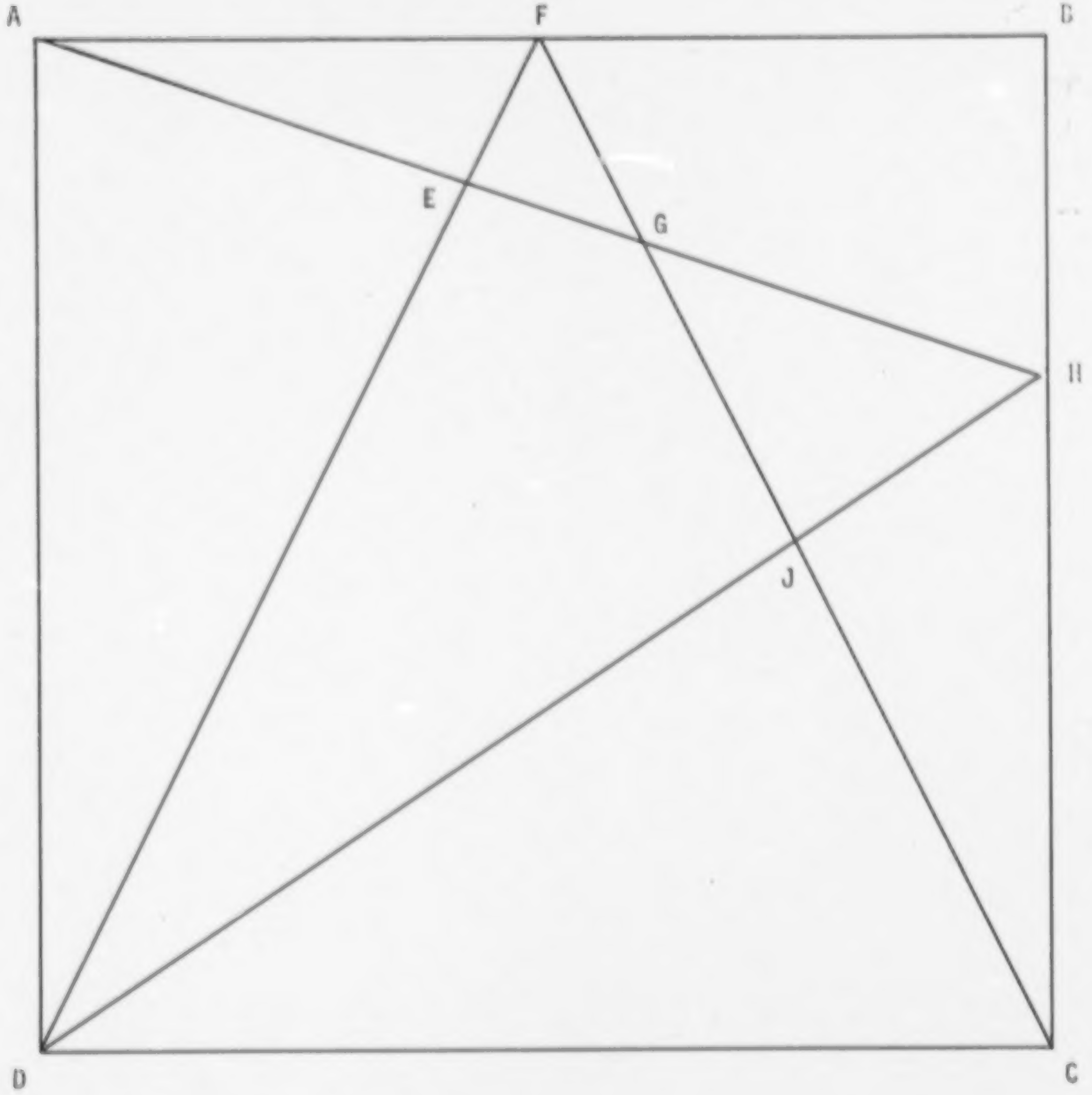

8.

9. What is the sum of the angles in problem 7?

A Square Filled With Triangles

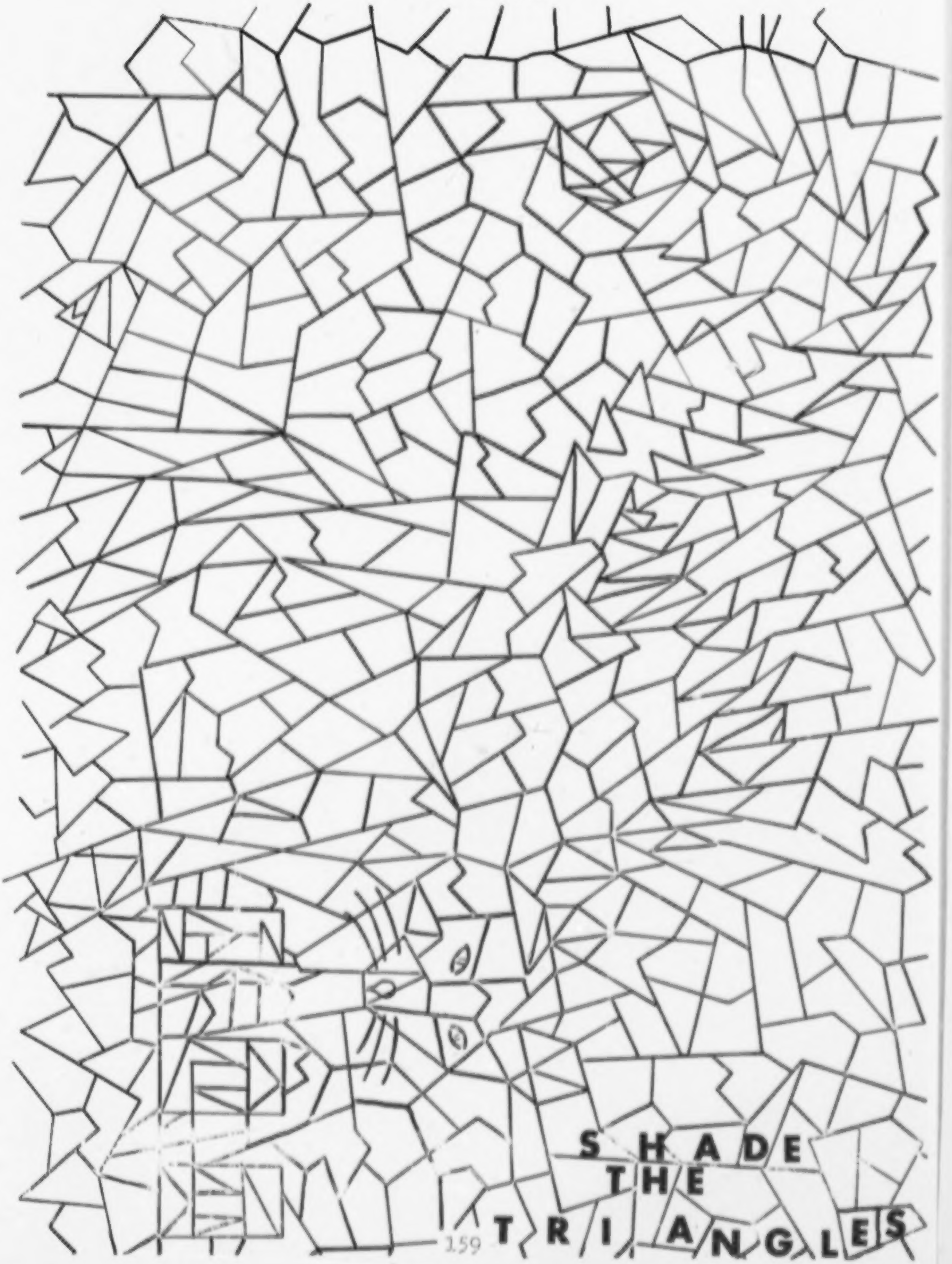


1. List the triangles in this figure. ________________

2. The perimeter of triangle DFC is ________________.

3. The perimeter of triangle EFG is ________________.

The Mad Cat



SHADE THE TRIANGLES

C. Ratio:

Exercises

1. Compare the following quantities by division. Be sure the numbers are in the same units.

   a. 5 inches, 30 inches
   b. 54 apples, 3 apples
   c. 18 feet, 12 feet
   d. 10 cars, 90 cars
   e. 4 minutes, 4 hours
   f. 3 days, 3 weeks
   g. 9 inches, 9 feet
   h. 600 lb., 2 tons
   i. 220 ft., 1 mile
   j. 4 weeks, 1 year

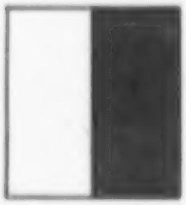
2. Find the quotient of the vertical pairs of numbers in each table. Can you complete each table?

9	27	42	66		99
3	9	14		25	

12	30	48	72		132
10	25	40		85	

3. A bag contained 6 red marbles, 7 white marbles and 10 green marbles.
   a. Compare the number of red marbles to the green marbles.
   b. Compare the number of green marbles to the white marbles.
   c. Compare the number of white marbles with the contents of the bag.
   d. What part of the bag's contents are not red?
   e. Compare the number of marbles that are not red to those that are red.

4. For each figure compare by division:
   a. Number of shaded parts to unshaded.
   b. Number of unshaded parts to shaded.
   c. Number of shaded parts to total number of parts.
   d. Number of unshaded parts to total number.

1


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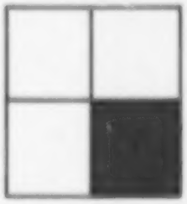

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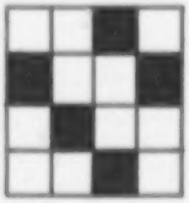

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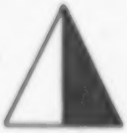

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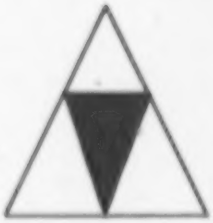

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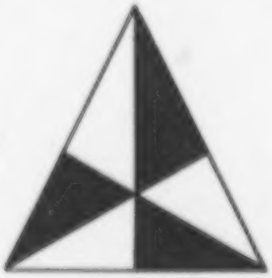
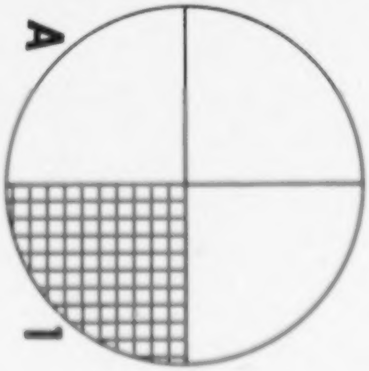


Ratio Practice

A


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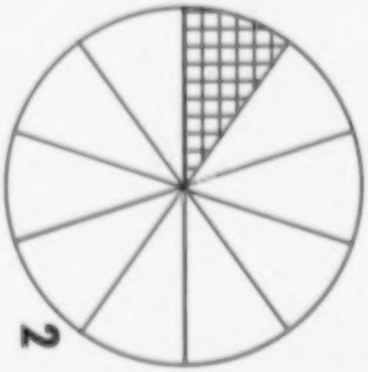

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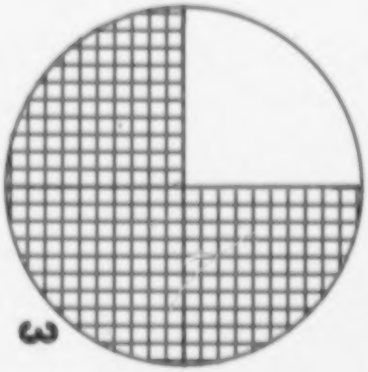

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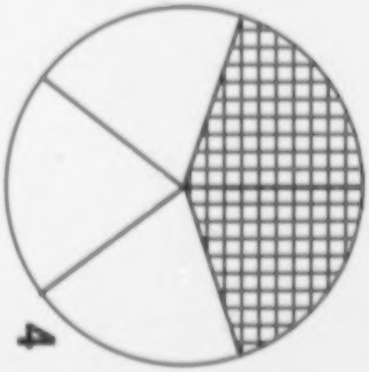

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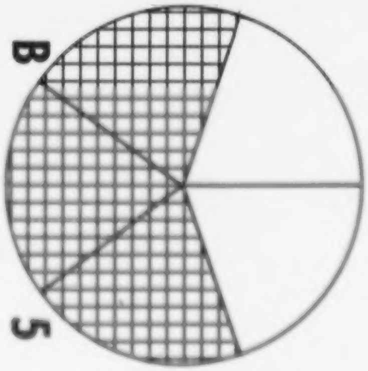

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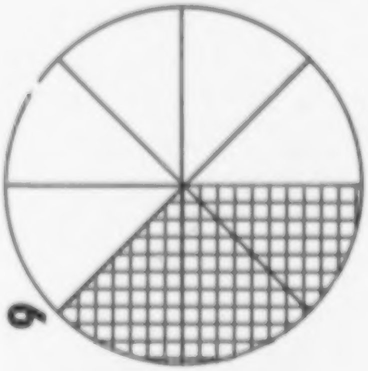

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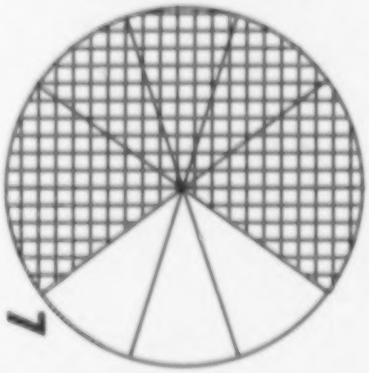

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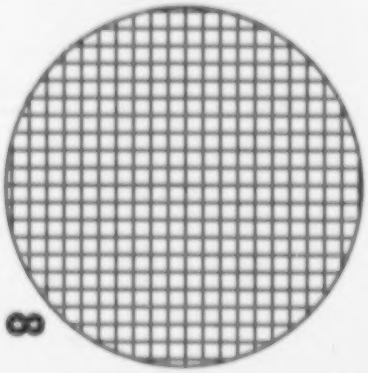

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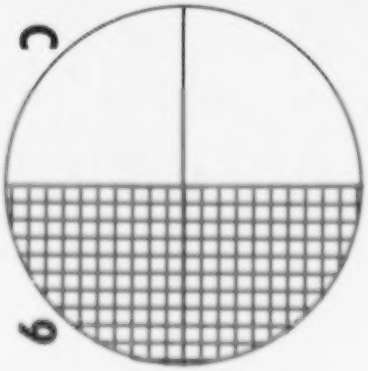

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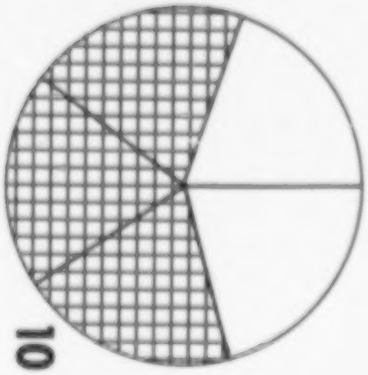

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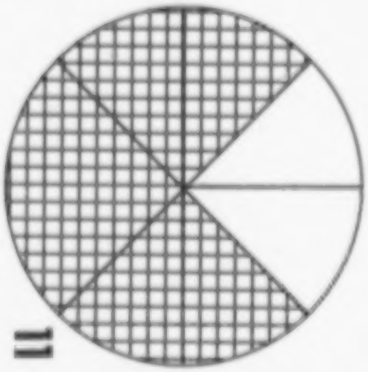

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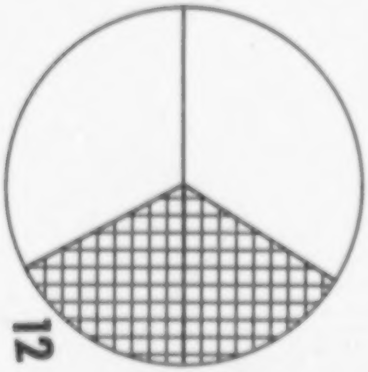


12

Practical Application

4 PLAYER

BADMINTON SET

BADMINTON SET

SET CONTAINS
- 4 Metal Handle Rackets
- 4 SHUTTLE COCKS
- 1 NET
- 1 METAL POLE SET
- 1 RULE BOOK

REG. $6.88

NOW ONLY!

$4.88

THERMOTOTE

INSULATED BAG

PERFECT FOR PICNICS AND OTHER OUTINGS

4 ¼"x6"x9"

REG. $1.29

NOW ONLY!

88¢

1. Find the ratio of the sale price to the regular price.

2. Find the ratio of the savings to the regular price. What is the per cent of discount?

3. How much is saved if you buy one of each article on this page?

4. What is the best buy on this page?

D. Proportions

1. Complete these proportions:

a. $\frac{3}{4} = \frac{9}{\_\_}$

b. 4:___ = 8:14

c. 5:6 = ___:42

d. $\frac{\_\_}{3} = \frac{15}{9}$

e. $\frac{8}{\_\_} = \frac{24}{15}$

2. Farmer Jones bought:

3 - 10# ducks that cost $2.82. Batman bought (at the same price) 1 - 10# duck. How much did Batman's duck cost?

____

3. One apiarist harvested:

1000# honey from 25 hives. Jon harvested (at the same rate) 18 bee hives. How much honey did Jon harvest?

____

4. Student Council buys:

Records at the rate of 6 for $1.00. Mary Smith buys (at the same price) 25 records. How much do Mary's records cost? _______________

5. Grapefruit

3/49¢
10 for ?____(at the same price)

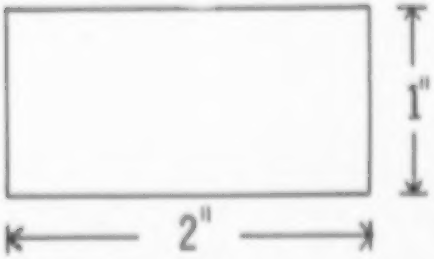
E. Scale Drawings

Exercises

1. Given scale 1/4, how long a line will represent a distance of 4 inches? 12 inches? 24 inches? 2 feet? 2 yards?

2. Given scale 1/3, what distance will be represented by a line 1 inch long? 3 inches? 1 1/2 inches? 1 foot?

3. Make a scale drawing of a swimming pool which is 50 ft. long and 24 ft. wide. Set up your own scale. Express your scale as a ratio.

4. 

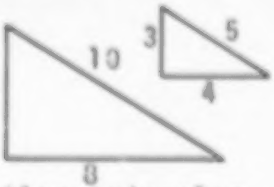
The scale drawing at the left is of a farmer's field. If our scale is 1/4 in. = 50 rods, find the perimeter of the field.

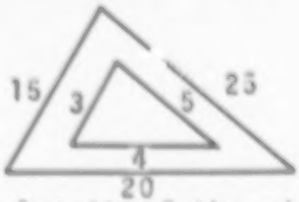
5. Make a scale drawing of our basketball court, using the scale 1" = 10'.

F. Similar Triangles

Exercises

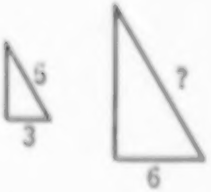
1. These are similar triangles. What characteristics can you find?



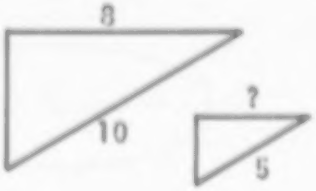


2. Similar triangles. Find the length of the missing side.

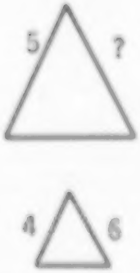
a.



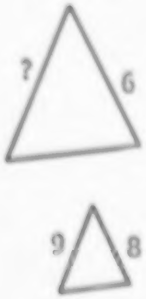
b.



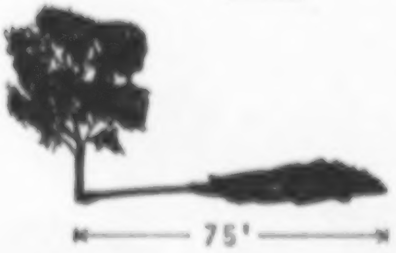
c.

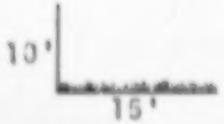


d.



3.



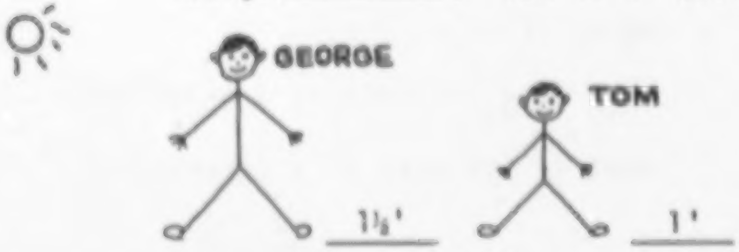


a. If we drew a line from top of a tree to end of shadow, what kind of triangle will be formed?

b. What is the height of the tree?

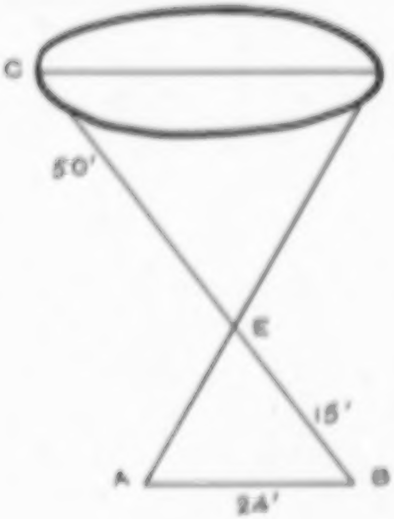
4. How tall is George?

George ________. Tom is 4' tall.

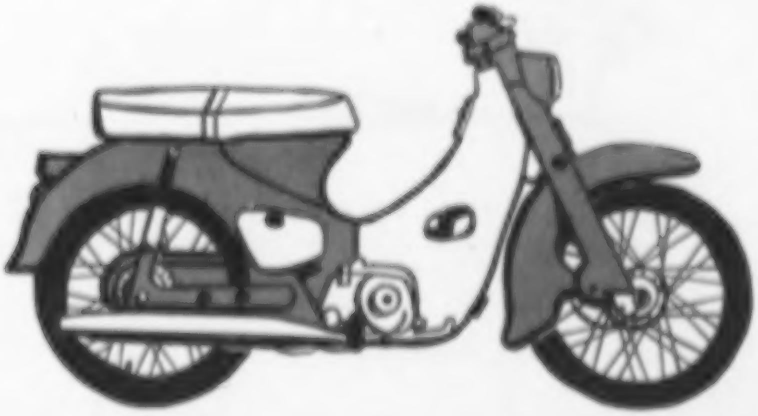

GEORGE
TOM
1½'
1'

5. A tower casts a shadow 21' long at the same time a 6' man casts a shadow 3' long. How tall is the tower? Draw a diagram.

6. How long is the pond?



7.



Honda 50 Cost $239.

This is $\frac{1}{2}$ the cost of a calculator.

What is the cost of a calculator?

3. Pythagorean Theorem

Exercises

Given two sides of a right triangle, find the other side.

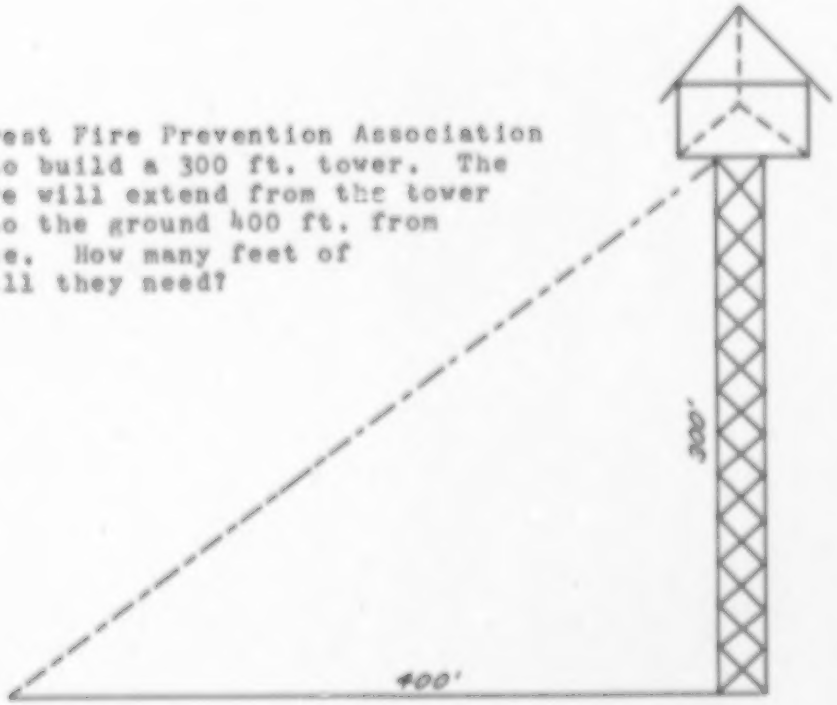
	Side A	Side B	Hypotenuse
1.	8	6	?
2.	?	12	15
3.	15	?	25
4.	5	12	?

5. How did you find the third side of the triangle? Explain your method or represent it in a short form.

6. The television companies measure the screen of a set by using a line which divides the screen into two right triangles. When they say a 21" screen they mean this line is 21" long.

   If I bought a 20" screen that was 12" wide, how long would the screen be?

7. The Forest Fire Prevention Association plans to build a 300 ft. tower. The guy wire will extend from the tower floor to the ground 400 ft. from the base. How many feet of wire will they need?



H. Area of Plane Geometric Figures:

Exercises

1. Find the cost of cementing a sidewalk 25 ft. X 8 ft. at $.65 per sq. ft.

2. Find the cost of sodding a lawn 12 ft. by 9 ft. at $.08 per sq. ft.

3. How many square feet of floor space remain uncovered if an 8 ft. by 10 ft. rug is placed on a floor 15 ft. long and 12 ft. wide?

4. How many square feet of tarpaulin are needed to cover the infield of a baseball diamond if the space between the bases is 90 feet?

5. The official United States flag is 4 ft. wide and 7.6 ft. long. What is the area of the flag?

Floorcraft

PHONE JE 5-5200 625 MAIN ST.
PINE BLUFF, ARKANSAS

1. Mr. Anthony West
Faucett Rd.

Living room 14'3" x 12' ____________ sq. yds. Carpet 05.35 sq. yd. Pad 1.00 sq. yd. and labor 01.00 sq. yd.

Complete ________________

2. Mr. Paul Greene
1605 W. 27th

Living room 12'6" x 15' ____________ sq. yds. Carpet 04.50 sq. yd. Pad 1.00 sq. yd. and labor 01.00 sq. yd.

Complete ________________

3. Mr. J. H. Jones
1419 Cherry St.

Living room 12' x 15' __________ sq. yds. Carpet 06.95 sq. yd. Pad 1.00 sq yd. and labor 01.00 sq. yd.

Complete ________________

4. The cost of flooring a room 18' x 15' with space to be omitted (6' x 3') with 9 x 9 tile costing 15¢ each and selling 023¢. What is the cost and the profit?

Exercises

1. A farmer's field is divided into two triangles. He wants to know the areas in order to buy fertilizer.

   The two parts of the field have these dimensions:

   a. base: 440 yards: 220 yards altitude

   b. base: 605 yards: 496 yards altitude

   Find the total area of the farmer's field in square yards. in acres. (4840 sq. yd. = 1 acre)

   Find the cost of fertilizer if 300 lbs. will cover 1 acre and fertilizer is $3.10 per 100 lbs.

2. Find area. Put answers in appropriate place in square. The sum of row 1 should equal the sum of column 1, etc.

   a. Rectangle: 1 = 20; w = 22
   b. Triangle: h = 100; b = 45
   c. Parallelogram: b = 20; h = 17
   d. Triangle: b = 50; h = 10
   e. Rectangle: 1 = 31; w = 30
   f. Triangle: b = 45; h = 8
   g. Parallelogram: b = 118; h = 35
   h. Triangle: b = 38; h = 20
   i. Rectangle: 1 = 61; w = 20
   j. Parallelogram: b = 122; h = 20
   k. Triangle: b = 20; h = 17
   l. Rectangle: 1 = 35; w = 26
   m. Triangle: b = 23; h = 60
   n. Rectangle: 1 = 30; w = 25
   o. Square: s = 10
   p. Parallelogram: b = 20; h = 100

a	b	c	d
e	f	g	h
i	j	k	l
m	n	o	p

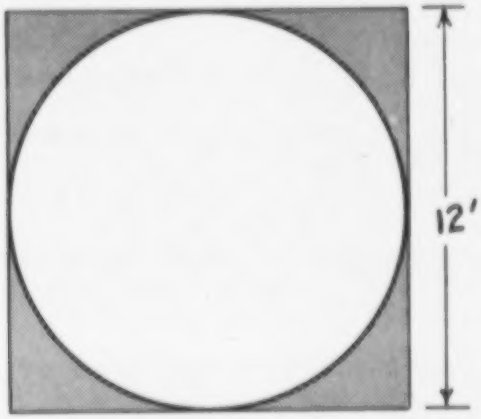
3. A challenge:

Area of Figure	Dimensions	What type figure?
a. 175 sq. in.	10 in. 35 in.	____________
b. 322 sq. in.	23 in. 14 in.	____________
c. 306 sq. in.	17 in. 36 in.	____________
d. 251 sq. in.	11 in. 23 in.	____________

Exercises

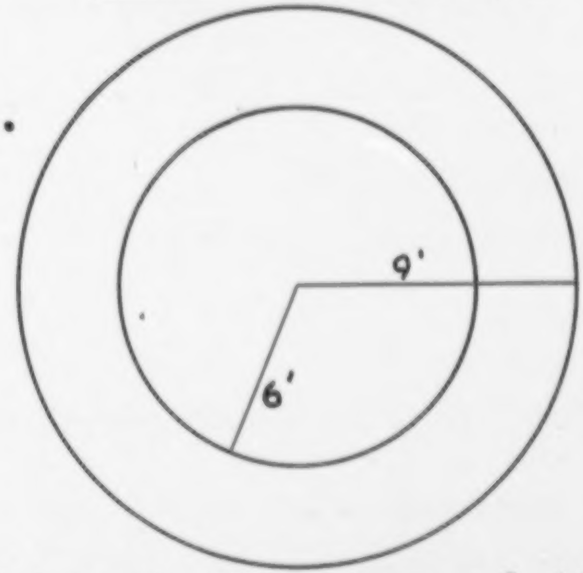
Finding The Areas of Circles:

1.

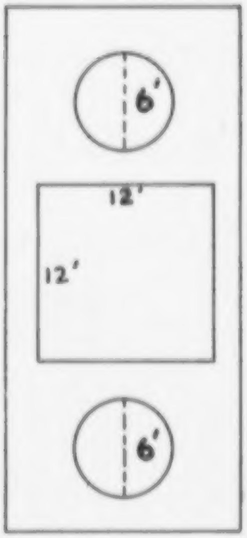


What is the area of the square? What is the area of the circle? What is the area of the shaded portion?

2.



At the left is a diagram of a circular swimming pool surrounded by a circular patio. The owner wished to paint the patio. He must find the area of the larger circle and subtract the area of the smaller circle. A quart of paint costs $2.49 and will cover 10 sq. ft. Find the cost of the paint.

3. 

A park is 15 feet wide and 45 feet long. The park contains 2 circular flower gardens and 1 square flower garden. The rest of the park is covered with grass. What is the area of the part that is grass covered?

4. Go to the basketball court and find the area of the following using 100-foot tape. (This is a good place to discuss error.)

a. The court has _____ sq. ft.

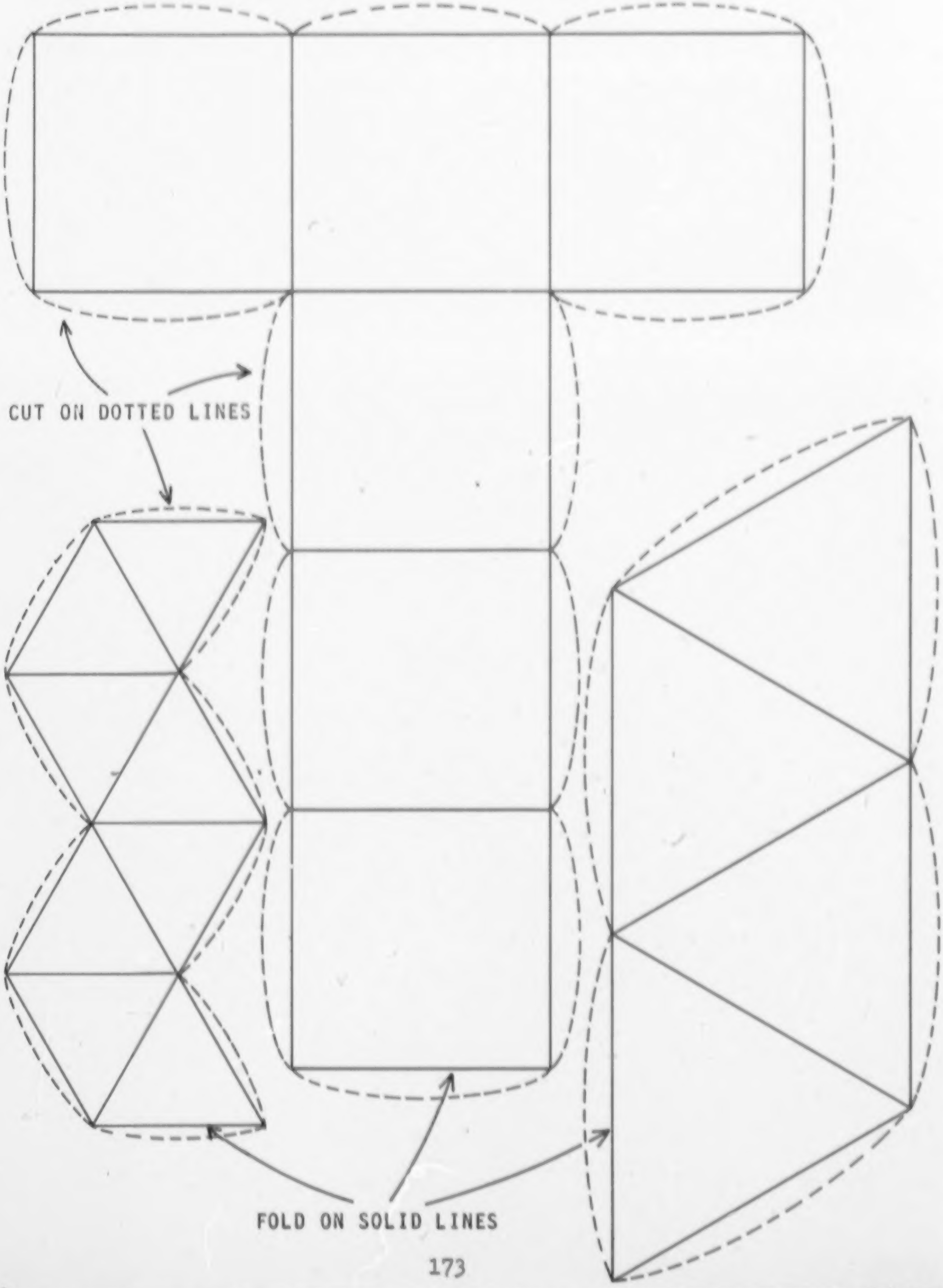
b. The center circle has ____ sq. ft.

c. The free throw circles have ____ sq. ft.

The Repetitious Number

Write down any 3 digits; repeat the digits a second time making it a six digit number. Divide your number by 7; divide this quotient by 11; divide this next quotient by 13. Your answer? ___________

Cut Out - Fold It - Name It


CUT ON DOTTED LINES
FOLD ON SOLID LINES

I. Surface area of cubes

Exercises

1. Cut a 1" square from paper.
2. How many one inch squares would you need to cover a 1 inch cube?
3. Let's make a cube:
    a. First draw a pattern to make the cube.
    b. Then construct the cube.
    c. In building a house people have different patterns.
    d. Could we make different patterns to use in making a cube?
    e. Can we make a one piece pattern?
    f. How many different one piece patterns can we design?
4. Talk about the cube.
    a. What is the shape of one side?
    b. What is the shape of the top? bottom?
    c. Could the top become a side by changing the position of the cube?
    d. Is there a name that could be used for both top and sides?
    e. What is the area of one face?
    f. Are the faces the same size?
    g. How many faces?
    h. What is the total area of the cube?

J. Surface area of a Rectangular Solid

Exercises

1. Make a rectangular box.
   - a. Measure all the faces.
   - b. Did you find any the same size?
   - c. Can you find the total area of the box?
2. Joe bought a new transistor radio.
   - a. The length is 10 inches.
   - b. The width is 6 inches.
   - c. The depth is 2 inches.

   Can you find the total area of the radio?
3. The diagram in Figure A represents a closed wooden box.
   - a. Find the number of square feet of lumber required to make four sides, the top, and the bottom of the box.
   - b. What is the cost if lumber is 12¢ per sq. ft.?

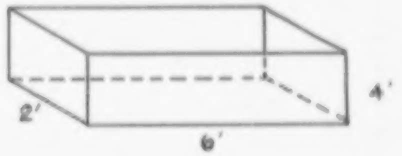


FIGURE A

"Time Killer"

Draw a circle around all the names for 8.

2   64   9-1   10-3   5+3

(2X3) + 2   15 ÷ 3   VIII

eight   12 - 5   8 + 0

6 + 2   8.0   6/3 X 2 $\frac{16}{2}$

4 + 1 + 1 + 2

K. Surface area of a cylinder

Exercises

1. Cut a rectangular piece of paper.

   a. Measure the length of the paper.

   b. Measure the width of the paper.

   c. Find the area of the piece of paper.

   d. Tape the widths of the paper together to form a cylinder.

   e. Do you know the circumference of the top of this cylinder without measuring?

   f. Can you find the diameter?

   g. Now can you find the area of the top of this cylinder?

   h. Do you know the area of the bottom of this cylinder without measuring?

   i. Now can you find the total area of the cylinder?

2. a. Can you find the total surface area of a cylinder which has a diameter of 5 inches and a height of 6 inches?

   b. Now if you had a diameter of 6 inches and a height of 8 inches, could you find the total area of a cylinder?

   c. A grocery store had a game going:

      If you tell the total surface area of a cola can, you are given a case of colas.

      The diameter is 2-1/2 inches.

      The height is 5 inches.

      Will you be able to get a free case of colas?

L. Volume of a Cube

Exercises

1. What dimensions would a wooden cube have if its volume has 27 cubic inches? 64 cu. in? 8 cu. in?

2. If a wooden cube 5 in. x 5 in. x 5 in. was submerged in a can full of water, how much water would it force out of the can?

3. If a lb. of green beans occupied 48 cu. in., how many lbs. could be packed in a cubic box with 36 in. sides?

4. How many 1 in. cubic blocks could be made from a rectangular solid 12 in. x 14 in. x 15 in.?

5. A swimming pool is 25 ft. long, 10 ft. wide and 12 ft. deep. How long would it take to fill the pool, if water flows into the pool at the rate of 50 gallons per half hour? A cubic foot of water is equal to 7.5 gallons.

6. a. Produce truck bed is 4 ft. x 15 ft. x 9 ft. How many pounds of strawberries will the truck carry if it would hold 5.5 lbs. per cu. ft.?

   b. If one bushel weighs 65 pounds, how many bushels could the truck carry?

Special Project

If you have a ten inch cube with top and one side painted red and any two other adjacent sides green, how many one inch cubes can be made from this cube?

Consider these 1 inch cubes:

Number of sides		Number of 1 in. cubes
Red	Green	
0	0	
0	1	
0	2	
0	3	
0	4	
1	0	
1	1	
1	2	
1	3	
2	0	
2	1	
2	2	
3	0	
3	1	
4	0	

Northside High S letic Department

North 23rd and B Streets Fort Smith, Arkansas

Athletic Expenses

1. Adhesive tape for the athletic department is delivered in containers packed in boxes which are 6 containers long, 4 containers wide, and 1 container deep.

a. ________ How many containers are in each box?

b. ________ How many containers are in 100 boxes?

c. ________ How many rolls of tape are in 100 boxes if each container holds 4 rolls?

d. ________ Each roll of tape is 10 yards long. How many yards of tape are in 100 boxes?

e. ________ How many feet of tape are in the 100 boxes?

f. ________ Each container of tape costs $2.00. How much will each box of tape cost?

g. ________ How much will 100 boxes of tape cost?

h. ________ How much does each roll of tape cost?

2. If the tape in 100 boxes was joined end to end and placed on a road from your city, what is the farthest city or town the tape would reach?

M. Volume of a Cylinder

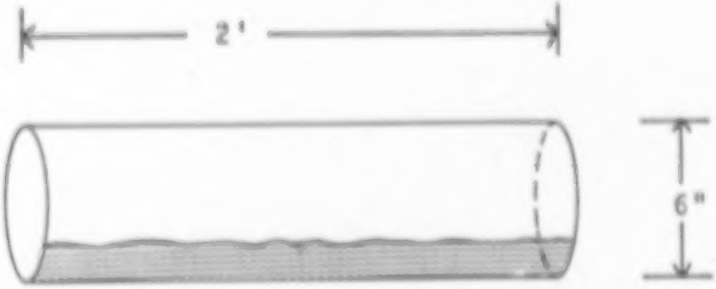
Exercises

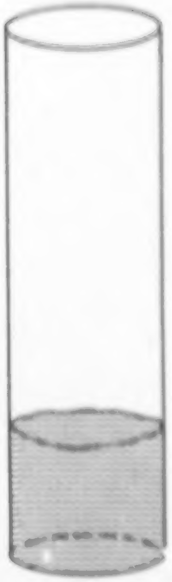
1. Suppose you went to a gas station with a can for gas and the attendant said he would fill it free if you could tell him how many cubic inches were in the can. If the can is 15" tall and 12" in diameter, could you get your gas free?

2. The tank on an oil truck is 7 ft. in diameter and 35 ft. tall (or long). If 1 cubic foot is approximately 7½ gallons, how many gallons of oil will the truck hold?

3. How many cubic yards of dirt must be removed in digging a well 5 ft. in diameter and 54 ft. deep?

Make A Guess





The tanks are the same size.

The water level in each tank is ¼ the height of the tank.

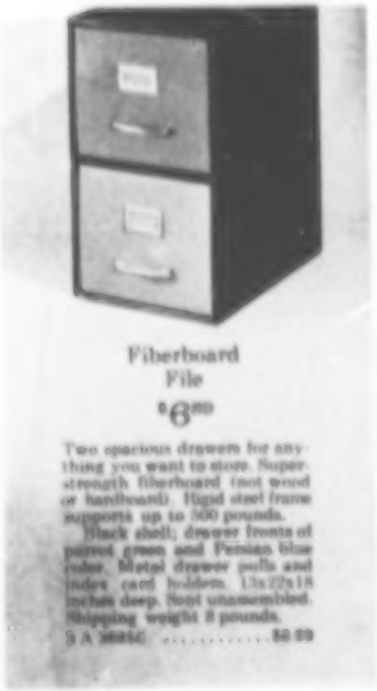
What do you think about the amount of water in the vertical tank compared to the horizontal tank?

Circle one: More, same, less

SOLID STEEL-WALL REDI-POOL WITH ATTACHED VINYL LINER

. . . just unroll into a circle and add water

. . . . BIG 8 FEET DIAMETER 20 INCHES DEEP



Fiberboard
File

$6[illegible]

Two spacious drawers for anything you want to store. Super-strength fiberboard (not wood or hardboard). Rigid steel frame supports up to 500 pounds.

Black shell; drawer fronts of parrot green and Persian blue color. Metal drawer pulls and index card holders. 13x22x18 inches deep. Sent unassembled. Shipping weight 8 pounds.

9 A [illegible] .... [illegible]

1. Find the surface area of the Splasher Pool. How many gallons of water would it take to fill the pool?
2 Find the total surface area of the file cabinet.

II. Comparing Units of Measure

Measurements You Need To Know

16 fluid ounces = 1 pint
2 measuring cups = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon
3 teaspoons = 1 tablespoon

16 ounces = 1 pound
2000 pounds = 1 ton
12 units = 1 dozen
8 quarts = 1 peck
4 pecks = 1 bushel

Exercises

Place the letter to the correct answer in the blank. There are more answers than problems.

_____ 1. 4 pecks
_____ 2. 12 tablespoons
_____ 3. 1600 ounces
_____ 4. 12 quarts
_____ 5. 32 pints
_____ 6. 16 gallons
_____ 7. 12 dozen
_____ 8. 19,200 pounds
_____ 9. 2 measuring cups
_____ 10. 32 fluid ounces
_____ 11. 6 pints
_____ 12. 48 units
_____ 13. 48 fluid ounces
_____ 14. 28 quarts
_____ 15. 18 teaspoons

a. 3 pecks, 4 qts.
b. 100 lbs.
c. 36 teaspoons
d. 3 gallons
e. 9 tons, 1200 pounds
f. 23 tablespoons
g. 32 quarts
h. 3 pints
i. 15 pecks
j. 6 tablespoons

k. 4 dozen
l. 144 units
m. 4 pints
n. 146 units
o. 17 measuring cups
p. 2 pints
q. 19 tons
r. 64 quarts
s. 16 fl. oz.
t. 16 quarts
u. 12 measuring cups

O. Denominate Numbers

Exercises

Add each set of denominate numbers. Include the units in your answer.

Length

1\.
3' 5"
7' 7"
4'11"
2' 4"

2\.
2 yds. 1 ft. 5 in.
3 yds. 2 ft. 8 in.
1 yd. 11 in.

Weight

3\.
7 lb. 3 oz.
2 lb. 9 oz.
4 lb. 5 oz.
1 lb. 10 oz.

4\.
2 tons 450 lbs.
1 ton 800 lbs.
3 tons 1400 lbs.
5 tons 975 lbs.

Dry Measure

5\.
2 tablespoons 2 teaspoons
4 tablespoons 1 teaspoon
3 tablespoons 1 teaspoon
5 tablespoons 2 teaspoons

6\.
3 bu. 1 peck
2 bu. 2 pecks
5 bu. 3 pecks
1 bu. 3 pecks

7\.
1 bu. 2 pecks 3 qts.
6 pecks 5 qts.
4 bu. 3 pecks 4 qts.
2 bu. 2 pecks 1 qt.

Liquid Measure

8.

2 gal.	3 qt.	1 pt.
1 gal.	1 qt.	3 pt.
4 gal.	2 qt.	2 pt.
5 gal.	3 qt.	1 pt.

9.

3 qt.	1 pt.	1 cup
	3 pt.	5 cup
2 qt.		1 cup

Angle Measurement

10.

37°	15'	47"
123°	41'	5"
21°	33'	29"
87°	59'	13"

11.

23°	17'	57"
202°	48'	
69°		17"
	50'	42"

12.

13°	6'	9"
108°	59'	43"
42°	43'	31"

Exercises

Subtract the second denominate number from the first and include the units in your answer.

LENGTH

1.
$$\begin{array}{rrr} & 17\text{ ft.} & 2\text{ in.} \\ - & 8\text{ ft.} & 7\text{ in.} \\ \hline \end{array}$$

2.
$$\begin{array}{rrrr} & 5\text{ yd.} & & 7\text{ in.} \\ - & 2\text{ yd.} & 1\text{ ft.} & 10\text{ in.} \\ \hline \end{array}$$

3.
$$\begin{array}{rrr} & 5\text{ mi.} & 700\text{ yd.} \\ - & 1\text{ mi.} & 880\text{ yd.} \\ \hline \end{array}$$

WEIGHT

4.
$$\begin{array}{rrr} & 6\text{ lb.} & 10\text{ oz.} \\ - & 2\text{ lb.} & 13\text{ oz.} \\ \hline \end{array}$$

5.
$$\begin{array}{rrr} & 18\text{ lb.} & \\ - & 5\text{ lb.} & 3\text{ oz.} \\ \hline \end{array}$$

6.
$$\begin{array}{rrr} & 6\text{ T.} & 1300\text{ lb.} \\ - & 3\text{ T.} & 1575\text{ lb.} \\ \hline \end{array}$$

DRY MEASURE

7.
$$\begin{array}{rrr} & 7\text{ tbsp.} & 1\text{ tsp.} \\ - & 2\text{ tbsp.} & 2\text{ tsp.} \\ \hline \end{array}$$

8.
$$\begin{array}{rrr} & 12\text{ bu.} & 1\text{ pk.} \\ - & 5\text{ bu.} & 3\text{ pk.} \\ \hline \end{array}$$

9.
$$\begin{array}{rrrr} & 8\text{ bu.} & 1\text{ pk.} & 5\text{ qt.} \\ - & 7\text{ bu.} & 3\text{ pk.} & 7\text{ qt.} \\ \hline \end{array}$$

LIQUID MEASURE

10.
$$\begin{array}{rrrr} & 17\text{ gal.} & 2\text{ qt.} & 1\text{ pt.} \\ - & 4\text{ gal.} & 3\text{ qt.} & 3\text{ pt.} \\ \hline \end{array}$$

11.
$$\begin{array}{rrrr} & 9\text{ qt.} & 1\text{ pt.} & 1\text{ cup} \\ - & 2\text{ qt.} & 3\text{ pt.} & 2\text{ cup} \\ \hline \end{array}$$

ANGULAR MEASURE

12.
$$\begin{array}{rrrr} & 63^{\circ} & 17' & 42'' \\ - & 27^{\circ} & 38' & 59'' \\ \hline \end{array}$$

13.
$$\begin{array}{rrrr} & 121^{\circ} & & 18'' \\ - & 69^{\circ} & 19' & 31'' \\ \hline \end{array}$$

Exercises

Multiply each pair of denominate numbers and include the units in your answer.

Length

1. 6 ft. 5 in.
   x 4
2. 7 yd. 2 ft. 5 in.
   x 7
3. 4 mi. 623 yd.
   x 3

Weight

4. 14 lb. 7 oz.
   x 3
5. 9 lb. 2 oz.
   x 9
6. 8 T. 869 lb.
   x 3

Dry Measure

7. 11 tbsp. 2 tsp.
   x 7
8. 16 bu 3 pk.
   x 6
9. 4 bu. 2 pk. 7 qt.
   x 5

Liquid Measure

10. 7 gal. 3 qt. 1 pt.
    x 7
11. 5 qt. 1 pt. 1 cup
    x 4

Angular Measure

12. 70° 0' 51"
    x 9
13. 27° 32' 45"
    x 8

Exercises

Length

1. $3\,\overline{)\,6\text{ ft. }9\text{ in.}}$

2. $2\,\overline{)\,3\text{ mi. }40\text{ yd.}}$

3. $4\,\overline{)\,3\text{ yd. }2\text{ ft. }4\text{ in.}}$

Weight

4. $9\,\overline{)\,10\text{ lb. }2\text{ oz.}}$

5. $5\,\overline{)\,4\text{ lb. }11\text{ oz.}}$

6. $8\,\overline{)\,3\text{ T. }1200\text{ lb.}}$

Dry Measure

7. $4\,\overline{)\,6\text{ tbsp. }2\text{ tsp.}}$

8. $5\,\overline{)\,3\text{ bu. }3\text{ pk.}}$

9. $9\,\overline{)\,5\text{ bu. }2\text{ pk. }4\text{ oz.}}$

Liquid Measure

10. $3\,\overline{)\,5\text{ gal. }2\text{ qt. }1\text{ pt.}}$

11. $3\,\overline{)\,6\text{ qt. }1\text{ pt. }1\text{ cup}}$

Angular Measure

12. $7\,\overline{)\,113^{\circ}\;40'\;6''}$

13. $4\,\overline{)\,57^{\circ}\qquad 12''}$

P. Measuring Time:

Exercises

1. Tom started on his homework at 4:30 p.m., and worked until 7:15 p.m. How long did he study?

2. From the time the first bell rings in the morning to the time the last period ends, how long are you in school?

3. We get out of school December 16 and start back on January 2. How many days are we out for Christmas?

4. School started September 5. We are out 2 days for Thanksgiving, 2 days for AEA, 10 days for Christmas, 2 days for spring holiday and school closes on May 26. How many days are we in school?

5. Find the date of maturity of each of the following notes.

   a. 30 day note dated April 9
   b. 4 month note dated March 17
   c. 60 day note dated November 30
   d. 45 day note dated August 14

6. Add:

a.	b.	c.
6 yr. 2 mo.	4 wks. 5 da.	3 hr. 43 min. 28 sec.
3 yr. 7 mo.	1 wk. 3 da.	7 hr. 19 min. 53 sec.
4 yr. 1 mo.	2 wk. 6 da.	5 hr. 52 min. 49 sec.

7. Subtract:

a.	b.	c.
3 day 9 hr.	35 min. 18 sec.	3 hr. 42 min. 25 sec.
18 hr.	19 min. 50 sec.	1 hr. 48 min. 39 sec.

8. Multiply:

a.	b.
5 da. 2 hr.	4 hr. 21 min. 34 sec.
9	5

9. Divide:

a. $5\overline{)\,15 \text{ yr. } 10 \text{ mo.}}$

b. $3\overline{)\,21 \text{ min. } 45 \text{ sec.}}$

Exercises

Computing wages:

1. Mr. Fox is paid $3.10 per hour. (a) How much is he paid for an 8-hour day? (b) a 40-hour week?

2. Miss Williams is paid $2.25 an hour. She receives time and a half for any hours worked over 40 per week. Find her pay for a 44-hour week.

3. Barbara, as a baby sitter, received $1.00 an hour before midnight and $1.25 an hour after midnight. If she got a job from 8:00 p.m. to 1:30 a.m. the next day, how much would she earn?

4. Given a time card: Compute the number of hours each day, to the nearest 15 minutes, and the total time for the week. Then find the amount of wages due if the rate was $1.80 per hour.

	In	Out	In	Out	No. of Hours
Mon.	8:59	12:10	12:59	5:02	______
Tues.	8:56	12:00	12:57	5:00	______
Wed.	9:00	12:02	12:58	4:30	______
Thurs.	8:59	12:00	12:57	5:00	______
Fri.	8:58	12:03	1:00	5:03	______

5. Use Time Cards
Make out the time cards and compute the week's wages for your week's work if your schedule was as follows:

	In	Out
Monday	7:53	4:40
Tuesday	7:56	4:38
Wednesday	8:05	4:35
Thursday	8:00	$\boxed{6:00}$
Friday	7:50	$\boxed{6:30}$

Rate per hour: $2.75

Normal work day begins at 8:00 a.m. and ends at 4:30 p.m.

Unpaid lunch period of 1/2 hour.

Time and a half to be paid for all time to the nearest 1/2 hour in excess of 8 hours per day if time out is circled.

Pay is docked 1/4 hour for each 15 minute period or part of a 15 minute period that the employee is late.

BI-MONTHLY TIME CARD. WYNNE PUBLIC SCHOOL

From________________ To________________

Hours Worked Date	Time Started A.M.	Time Stopped	Time Started P.M.	Time Stopped	TOTAL HOURS

Signed________________ Total Hours Worked This Period______

BI-MONTHLY TIME CARD. WYNNE PUBLIC SCHOOL

From________________ To________________

Hours Worked Date	Time Started A.M.	Time Stopped	Time Started P.M.	Time Stopped	TOTAL HOURS

Signed________________ Total Hours Worked This Period______

Exercises

Computing time in days, months and years:

1. How much older is Amy than Ann if they were born the same year and Amy's birthday is January 24 and Ann's is June 3?

2. Find the number of days between the following dates.

   a. May 28 and Sept. 2.
   b. Nov. 28 and Dec. 25.
   c. Sept. 6 and May 28.
   d. May 31 and March 1.
   e. June 13 and July 22.
   f. Dec. 25 and March 22.

3. How many days from:

   a. Feb 2 to June 15?
   b. April 5 to November 15?
   c. August 4, 1966 to April 15, 1968?
   d. Jan. 10 to May 1?

4. What day is the 133rd day of the year?

5. What was the date of 43 days ago?

6. If you are 14 years, 3 mo. and 2 days old, when were you born?

7. If you went on a 26 day vacation which began June 16, when would you be due back at work?

8. Find days between Sept. 5, 1956 and July 31, 1958.

9. How old is Nancy if she was born August 3, 1955?

10. Find the maturity date of the following notes:

    a. 45 day note from Jan. 14.

    b. 174 day note from July 4.

LITTLE JOE

"IT'S SUCH A BEAUTIFUL DAY, LET'S ROAR UP 101, BLAST ACROSS 33 TO 99 AND BURN IT BACK TO L.A."

Joe was a general 1______ student who bought a Honda with some extras, including handlebars set at a sharp 2______ . He found that there were still some things to work on. He started by 3______ the air pressure of the tires after an 4________ of the amount in each. He found that the tires were 5_______ in air pressure. The tail light was shaped like a 6________ (a member of the 7_________ family) and the headlight was in the shape of a 8______. The motor of his Honda was "missing" so he decided to 9________ the spark plug and buy a new 10______ of points. Since the 11________ of the gas tank was six 12_______ across he figured the 13________ and found it was 1 gallon. After counting his change, he filled her up and was ready to blast off.

He really wouldn't have bought this particular Honda but after much 14________ Joe decided upon the motor with the lowest price and the biggest 15________ he could get. This machine had the lowest gear 16_______ . After adding the 17________ on to the regular price, Joe decided to make a 18_______ 19_________ and buy it on what is called an 20 __________ plan. Even though he has already had to 21 __________ the spark plug and a set of 22 __________, he still feels he bought the best.

The license number was a 23 __________ 24 __________ and the license plate was a three-sided figure called a 25 __________.

Joe also liked to eat a large piece of 26 __________ and strum a few 27 __________ on his brother's guitar. Since Joe and his brothers were little boys the grocery bill has 28 __________ to a steady 29 __________. The 30 __________ of increase gives his father a headache.

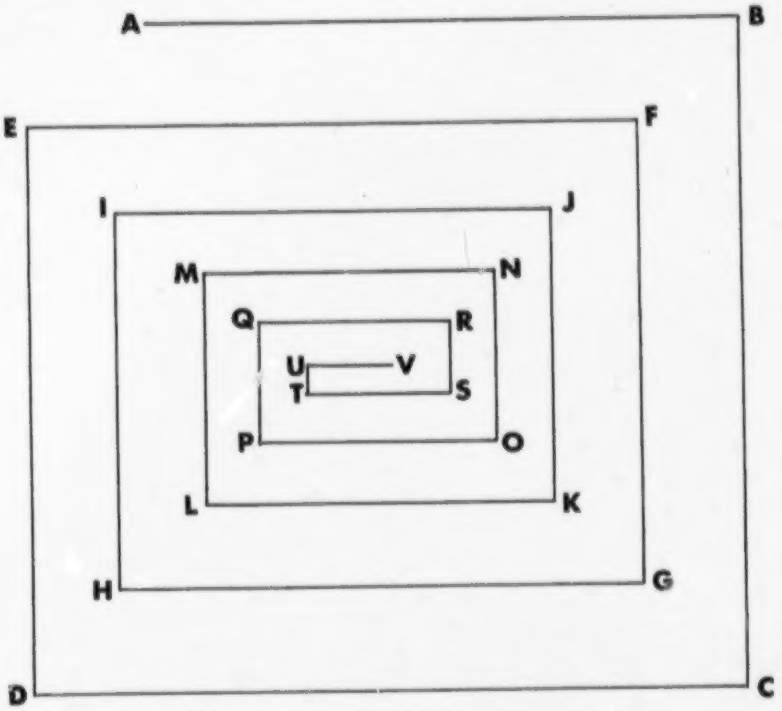
In school Joe disliked using a 31 __________ to measure lines but enjoyed using the 32 __________ and 33 __________ to draw circles. His 34 __________ grade is good, but could be better if he wouldn't spend so much time with a certain blonde who has many 35 __________ and is quite short in 36 __________.

****

Fill blanks with words from this list. Use each word only once or not at all.

angle
average
area
calculation
chords
circle
compass
counting
commutative
curves
diameter
difference
discount
down
estimate
height
inches
increase
increased
installment
mathematics
measuring
number
payment
per cent
pi
points
protractor
quadrilateral
quantity
rate
ratio
rational
replace
ruler
set
square
sum
tax
triangular
unequal
volume

Maze



Name the line segments.

Measure them.

Find their sum.

PERMUTATIONS

The letters A and B can be rearranged as AB and BA. The letters A, B, and C can be rearranged as ABC, ACB, BCA, BAC, CAB, and CBA. Two letters were rearranged two ways, three letters were rearranged six ways. How many ways can you rearrange the four letters A, B, C, and D? Can you find a rule so that if you were given the letters A, B, C, D, and E to rearrange you could tell how many ways this can be done without writing them down?

Q. Board Feet:

Exercises

How many board feet in each?

1. 1" x 12" x 10'
2. 2" x 6" x 12'
3. 2" x 4" x 12'
4. 1" x 4" x 12'
5. 1" x 6" x 8'
6. 2" x 8" x 16'
7. 4" x 4" x 10'
8. 2" x 6" x 16'
9. 1" x 2" x 12'
10. 2" x 12" x 12'
11. 2" x 2" x 10'
12. 1" x 4" x 8'
13. 1" x 10" x 10'
14. 1" x 10" x 16'
15. 1" x 8" x 12'
16. 1" x 2" x 6'
17. 4" x 8" x 16'
18. 2" x 4" x 8'
19. 2" x 2" x 8'
20. 8" x 8" x 16'
21. 4" x 6" x 12'
22. 6" x 8" x 6'
23. 1" x 12" x 8'
24. 1" x 8" x 8'
25. 2" x 4" x 10'

R. Order Relations

Exercises

Fill in each circle with the correct symbol.

Choose from these: =, >, <

1. The number of girls in our class ○ the number of boys.
2. 1 ft. 8 inches ○ 19 inches.
3. 1 lb. ○ 17 ounces.
4. 1 mile ○ 5283 ft.
5. Number of pounds you weigh ○ 200 lbs.
6. Your height ○ 5 ft. 8 in.
7. Number of grains of sand in a quart jar ○ number of grains of sand in a pint jar.
8. Number of ounces in a lb. ○ number of ounces in a pint.
9. Number of days in April ○ number of days in May.
10. Number of days in week ○ number of days in school week.
11. Price of new Cadillac ○ price of new Mustang.
12. Distance from your home to Memphis ○ distance from your home to Little Rock.

Fun

Add me to myself.
Multiply by 4.
When you divide by 8
You'll have me once more.
Who Am I?

Exercises

Fill in the circles with the correct symbols: (>, <, or =).

1. -5 ○ -2
2. 7 ○ 3
3. -1 ○ 3
4. 3 ○ 5
5. 4 ○ -3
6. -6 ○ -8
7. -3 ○ 3
8. -7 ○ 0
9. $\frac{11}{4}$ ○ $\frac{9}{6}$
10. $\frac{-5}{6}$ ○ $\frac{-7}{8}$
11. $\frac{3}{8}$ ○ $\frac{1}{4}$
12. $\frac{-19}{7}$ ○ -2

13. -2 ○ -3 but ○ -1
14. 4 ○ 6 but ○ 3
15. 0 ○ 1 but ○ -3
16. 4 ○ 4 but ○ 10

LOST WORDS

The beginnings or endings of the words listed below were lost. With the help of the given clues, can you find the missing letters?

1.	_ _ _end	Number added
	_ _ _ _ _end	Number divided
	_ _ _ _ _ _ _end	Number subtracted
2.	_ven	Number divisible by 2
	_ _ven	Lucky number
	_ _ _ven	Prime number
3.	_int	Unit of liquid measure
	_ _int	A location
	_ _ _ _ _int	Center of a segment
4.	_ine	Unending straight mark
	_ine	Number
	_ _ _ _ _ _ine	To find a solution
5.	_ear	Unit of time
	_ _ear	Understandable problem
	_ _ _ear	Type of measure such as a foot
	_ _ _ _ _ _ear	Three or more points in a line
6.	rat_	Acceleration
	rat_ _	Comparison of two things
	rat_ _ _	Rank
	rat_ _ _ _ _	Fractional number

7.	_ector	Directional arrow
	_ _ _ector	Divides into two equal parts
	_ _ _ _ector	Divides equally into three parts
	_ _ _ _ _ _ector	Line meeting another line
8.	_ _ _ _ent	Part of a line
	_ _ _ _ent	A member of a set
	_ _ _ _ent	Line touching a circle only once
	_ _ _ _ _ent	Beside or next to
	_ _ _ _ _ _ent	Coinciding or equal
	_ _ _ _ _ _ _ent	Equal or same as
	_ _ _ _ _ _ _ent	At same time or place
	_ _ _ _ _ _ _ent	One of two angles whose sum is 90
9.	_ _ter	Basic unit of measure
	_ _ _ter	Part of a circle
	_ _ _ter	Method of identifying members of a set
	_ _ _ _ter	More than
	_ _ _ _ _ter	Point where angle bisectors meet
	_ _ _ _ _ _ter	Distance around something
	_ _ _ _ _ter	Line in circle
	_ _ _ _ _ _ _ter	Approx. 2/5 inch
10.	_ight	Number
	_ight	Angle of 90°
	_ _ight	Mass
	_ _ight	Altitude
	_ _ _ _ight	Not crooked

Judy's Problem

F	L	O	W	C	H	A	R	T	S	S	P	A	C	E	N	X	E
R	B	G	C	O	D	D	A	N	G	L	E	T	M	T	N	A	S
A	L	G	E	B	R	A	S	U	V	A	N	D	R	N	E	F	R
C	H	L	Y	J	B	R	D	M	A	M	T	B	O	I	S	U	E
T	R	Z	C	I	R	C	L	E	W	I	A	X	T	O	Q	R	V
I	I	T	H	N	E	P	N	R	L	C	G	R	A	P	H	J	N
O	H	T	A	V	D	I	V	I	D	E	O	L	R	A	D	I	I
N	E	H	R	E	U	N	Z	C	J	D	N	P	E	F	E	N	W
D	T	U	T	R	C	O	M	A	T	H	P	S	M	T	H	O	M
F	I	N	I	T	E	I	N	L	D	L	L	L	U	N	O	E	R
D	M	A	L	E	M	N	O	P	R	E	W	S	N	A	L	Q	A
A	E	C	G	X	F	G	I	N	Q	W	Y	Z	C	B	B	D	R
P	S	X	A	R	B	F	C	E	N	T	E	R	O	Y	R	E	C
E	U	M	R	R	A	Y	J	I	M	O	R	R	I	S	Y	O	P
A	M	C	L	N	Q	M	R	E	D	X	P	I	D	A	V	I	D

Find as many of the following mathematical terms as possible. Draw a line through each word found.

1. decimals
2. invert
3. fraction
4. set
5. add
6. times
7. finite
8. space
9. equal
10. graph
11. math
12. reduce
13. angle
14. problem
15. numerical
16. algebra
17. pentagon
18. rational
19. diagram
20. numerator
21. subtraction
22. arithmetic
23. flowchart
24. integer
25. answer
26. divide
27. circle
28. square
29. inverse
30. vertex
31. pi
32. center
33. null
34. odd
35. arc
36. ray
37. radii
38. point
39. sum
40. chart

Unit IX

FINANCE

A. Time Budget

Exercises

1. Give the time for one 24 hour day which you spent on things listed below and others not listed, which you feel should be listed.

	hrs.	%
a. T.V.	______	______
b. Study	______	______
c. Sports	______	______
d. School	______	______
e. Sleeping	______	______
f. Work at home	______	______
g. Recreation	______	______
h. Job away from home	______	______

2. If you do not have a job, budget your time so you can have a job away from home.

OR

If you have a job, budget your time so you can have a second job away from home or work longer hours, if possible.

ACTIVITY	TIME SPENT
a. ______	______
b. ______	______
c. ______	______
d. ______	______
e. ______	______
f. ______	______
g. ______	______

3. Name one item you would like to buy. ______

. Deductions

Exercises

1. Compute the following based on the fact that a job pays $2.83 per hour and the work week is 40 hours.

GROSS PAY ______
Deductions
(Single-1 exemption)
State Income Tax $1.63
Federal Income Tax $17.10
Social Security $4.75

TOTAL DEDUCTIONS ______

NET PAY ______

2. Compute the following for a 46 hour week. The man earns $2.83 per hour and is paid time and a half over-time for over 40 hours.

$2.83 X 40 = ______
1½ X $2.83 X ______ = ______

GROSS PAY
Deductions
(Single-1 exemption)
State Income Tax $1.72
Federal Income Tax $21.10
Social Security $5.82

TOTAL DEDUCTIONS ______

NET PAY ______

TOOL AND
DIE MAKER

IMMEDIATE OPENING RATE OF PAY COMPARES WITH NATIONAL SCALE. EXCELLENT WORKING CONDITIONS AND LIBERAL EMPLOYEE BENEFITS. CALL US COLLECT AT ME 6-1200, ROGERS, ARKANSAS, AND ASK FOR H. L. BRYLES

DAISY MFG. CO.
ROGERS, ARK.

3. In problems 1 and 2
State Income Tax is what percent of salary?

(1) ______ (2) ______

Federal Income Tax is what percent of salary?

(1) ______ (2) ______

Social Security is what percent of your salary?

(1) ______ (2) ______

C. Ordering from a Catalog

Exercises

HOW TO FIND YOUR PARCEL POST ZONE FROM MEMPHIS USING YOUR POST OFFICE ZIP CODE NUMBER

Look for the first three numbers of your ZIP CODE on the following chart to determine parcel post zone from Memphis. For example: If you live in Amite, Louisiana and your ZIP CODE number is 70422, the first three (3) numbers **704** indicates your parcel post zone from Memphis is Zone 3.

ALABAMA	*Parcel Post Zone*
ZIP CODE NUMBERS beginning with: 350, 351, 354, 355, 356, 367, 369 are:	3
ZIP CODE NUMBERS beginning with: 364, 365 are:	4

ARKANSAS	*Parcel Post Zone*
ZIP CODE NUMBERS beginning with: 716, 720, 721, 722, 723, 724, 725 are:	1 & 2
ZIP CODE NUMBERS beginning with: 717, 718, 719, 726, 728, 729 are:	3

KENTUCKY	*Parcel Post Zone*
ZIP CODE NUMBERS beginning with: 420 are:	1 & 2
ZIP CODE NUMBERS beginning with: 421, 422, 424, 427 are:	3
ZIP CODE NUMBERS beginning with: 400 are:	4

LOUISIANA	*Parcel Post Zone*
ZIP CODE NUMBERS beginning with: 704, 710, 712, 713, 714 are:	3
ZIP CODE NUMBERS beginning with: 700, 701, 703, 707, 708 are:	4

MISSISSIPPI	*Parcel Post Zone*
ZIP CODE NUMBERS beginning with: 386, 387, 388, 389 are:	1 & 2
ZIP CODE NUMBERS beginning with: 390, 391, 392, 393, 394, 396, 397 are:	3
ZIP CODE NUMBERS beginning with: 395 are:	4

MISSOURI	*Parcel Post Zone*
ZIP CODE NUMBERS beginning with: 637, 638, 639 are:	1 & 2
ZIP CODE NUMBERS beginning with: 636, 654, 655, 656, 657 are:	3

TENNESSEE	*Parcel Post Zone*
ZIP CODE NUMBERS beginning with: 381 are:	Local
ZIP CODE NUMBERS beginning with: 380, 382, 383 are:	1 & 2
ZIP CODE NUMBERS beginning with: 370, 371, 372, 373, 384, 385 are:	3

PARCEL POST RATE TABLE

SHIPPING WEIGHT (16-oz. equal 1 lb.)	Local Zone	ZONES 1 and 2	ZONE 3	ZONE 4	ZONE 5
Up to but not including 16 oz.	6c for the first 2 ounces and 2c for each additional ounce.				
16 oz. to 2 lbs.	60c	65c	70c	75c	80c
2 lbs. 1 oz. to 3 lbs.	60c	75c	80c	85c	95c
3 lbs. 1 oz. to 4 lbs.	65c	80c	85c	95c	$1.10
4 lbs. 1 oz. to 5 lbs.	70c	85c	90c	$1.05	1.20
5 lbs. 1 oz. to 6 lbs.	70c	95c	$1.00	1.15	1.35
6 lbs. 1 oz. to 7 lbs.	75c	$1.05	[illegible]	1.25	1.50
7 lbs. 1 oz. to 8 lbs.	75c	1.10	[illegible]	1.35	1.60
8 lbs. 1 oz. to 9 lbs.	80c	1.15	[illegible]	1.45	1.75
9 lbs. 1 oz. to 10 lbs.	80c	1.20	1.30	1.55	1.90
10 lbs. 1 oz. to 11 lbs.	80c	1.25	1.35	1.60	2.00
11 lbs. 1 oz. to 12 lbs.	85c	1.30	1.45	1.70	2.10
12 lbs. 1 oz. to 13 lbs.	85c	1.35	1.55	1.80	2.20
13 lbs. 1 oz. to 14 lbs.	90c	1.40	1.60	1.90	2.35
14 lbs. 1 oz. to 15 lbs.	90c	1.45	1.65	2.00	2.45
15 lbs. 1 oz. to 16 lbs.	95c	1.55	1.75	2.05	2.55
16 lbs. 1 oz. to 17 lbs.	$1.00	1.60	1.80	2.15	2.65
17 lbs. 1 oz. to 18 lbs.	1.00	1.65	1.90	2.20	2.75
18 lbs. 1 oz. to 19 lbs.	$1.05	$1.70	$2.00	$2.30	$2.85
19 lbs. 1 oz. to 20 lbs.	1.05	1.75	2.05	2.40	2.95
20 lbs. 1 oz. to 21 lbs.	1.10	1.85	2.10	2.45	3.05
21 lbs. 1 oz. to 22 lbs.	1.15	1.90	2.15	2.55	3.15
22 lbs. 1 oz. to 23 lbs.	1.15	1.95	2.20	2.60	3.25
23 lbs. 1 oz. to 24 lbs.	1.20	2.00	2.25	2.65	3.35
24 lbs. 1 oz. to 25 lbs.	1.20	2.05	2.30	2.75	3.45
25 lbs. 1 oz. to 26 lbs.	1.20	2.10	2.35	2.85	3.55
26 lbs. 1 oz. to 27 lbs.	1.25	2.15	2.40	2.90	3.70
27 lbs. 1 oz. to 28 lbs.	1.25	2.20	2.45	2.95	3.80
28 lbs. 1 oz. to 29 lbs.	1.30	2.25	2.50	3.05	3.90
29 lbs. 1 oz. to 30 lbs.	1.30	2.30	2.55	3.10	4.00
35 lbs.	1.45	2.55	2.85	3.45	4.50
40 lbs.	1.55	2.80	3.15	3.85	5.00
45 lbs.	1.70	3.05	3.40	4.30	5.55
50 lbs.	1.80	3.25	3.70	4.60	6.05
55 lbs.	1.95	3.45	4.00	4.95	6.55
60 lbs.	2.05	3.65	4.30	5.35	7.00
65 lbs.	2.20	3.85	4.60	5.70	7.45
70 lbs.	2.30	4.05	4.85	6.05	7.85

POSTAL MONEY ORDER, AMERICAN EXPRESS AND PARCEL POST C.O.D. FEES

C.O.D. FEES	
Up to $10.00	70c
$10.01 to $25.00	80c
$25.01 to $50.00	90c
$50.01 to $100.00	$1.00
$100.01 to $200.00	1.10

POSTAL MONEY ORDER FEES	
Up to $10.00	25c
$10.01 to $50.00	35c
$50.01 to $100.00	40c

AMERICAN EXPRESS MONEY ORDER FEES	
Up to $200.00	35c*

*Exception: 30c or 40c in some areas.
Check your local American Express Agency.

For amounts over $100, purchase additional money orders at above rates. American Express money orders can be purchased at any American Express Agency. Postal money orders can be purchased at any post office or through your carrier on rural routes. On C.O.D. orders we bill you for C.O.D. collection fees and money order fees which we must pay the post office.

Complete the order blank on the following page. Use your own name and address and the current date.

1. Find the total price of each item.
2. Find the total for goods.
3. What is the tax on the order?
4. How do you want the order shipped?
5. What is the weight of the order in pounds and ounces?
6. What is total weight in pounds?
7. What is your zip code?
8. What is your total cash price?
9. What is the amount of the money order?
10. How much is the money order fee?
11. What postage do you put on the letter?
12. How much cash does it take to pay the money order clerk, including your stamp for letter?
13. What square do you mark in the lower left hand corner if this is a cash order?
14. Would it be cheaper to send a Money Order or Check?
15. What does C.O.D. mean?
16. Which is cheaper, cash or C.O.D.? Why?

Send Mail Orders to:
SEARS, ROEBUCK AND CO.
495 N. Watkins
Memphis, Tennessee 38102

OR, use this handy form when you place your order by phone or in person at Sears Catalog Sales Office, Sears Retail Catalog Dept. or Sears Authorized Catalog Sales Merchant.

Sears

Date ______________ 19___

PLEASE BE SURE TO INCLUDE ZIP CODE IN YOUR ADDRESS

PLEASE DO NOT WRITE IN THIS SPACE

%2-0- ____ - ____ CR
NO. ORDERS BATCH NO.

%3-0- - - -5- - & CR
OP. NO. OR. NO. NO. LN. TP. SL. MTH. SHP. ADJ. CASH

⋈ ____ ⋈ ____ & - CR
ACCT. NO. TERMS CONT. LIFE DEF. CODE

/E - - - CR
Brch CODE SHIP CHGE. TAX % ZONE

All members of the same household should order under one name

PLEASE PRINT PLAINLY ONE LETTER IN EACH SQUARE

MY SEARS CREDIT ACCOUNT NUMBER IS: ⋈ ____________

PLEASE DO NOT WRITE IN THIS SPACE ⋈ ____ & ____ – ____

NAME – ____________________ &

Mailing Address ____________________ &

Post Office ______________ State ________

Telephone No. ______________ Zip Code ________ CR

PLEASE DO NOT WRITE IN THIS SPACE

SHIP TO ANOTHER ADDRESS? If you want this order shipped to another person or to a different address, freight or express station, give address here:

Name ____________________

Mailing Address ____________________

Post Office ________ State ________ Zip Code ________

IF YOUR ADDRESS HAS CHANGED since last order, please give your old mailing address here:

Mailing Address ____________________

Post Office ________ State ________ Zip Code ________

STATE COLOR OR PATTERN CHOICE BY NUMBER WHERE REQUESTED

	CATALOG NUMBER	HOW MANY	NAME OF ITEM	COLOR NO. Pattern, Finish, Etc.	SIZE Measure to be sure	PRICE Ea., Yd., Pr., Etc.		TOTAL PRICE Dollars	TOTAL PRICE Cents	SHPG. WT. Lbs.	SHPG. WT. Oz.
1	57R7211	1	AM radio	Blue		17	59			1	4
2	119R8307	1	Swim trunks	Green	34	7	98				15
3	6 F 2448	1	Football			8	67			1	10
4	6F 5057C	2	Bike tires	Black		1	89			6	0
5											
6											
7											
8											
9											
10											
11											

ARKANSAS, LOUISIANA, MISSOURI or TENNESSEE customers add 3c tax for each dollar of goods. **LOUISIANA and TENNESSEE** customers also add local tax if required by your city, county or parish.
ALABAMA customers add 4c tax for each dollar of goods.
KENTUCKY or MISSISSIPPI customers add 5c for each dollar of goods.
Tax rates based on information available at printing and subject to change.

HOW SHALL WE SHIP? Parcel Post ☐ Express ☐ Freight (Rail or Truck) ☐

Add this to my

- ☐ **SEARS REVOLVING CHARGE ACCOUNT,**
- ☐ **SEARS EASY PAYMENT PLAN** or
- ☐ **MODERNIZING CREDIT PLAN RETAIL INSTALLMENT CONTRACT AND SECURITY AGREEMENT,** which is incorporated herein by reference.

ENTER ACCOUNT NUMBER IN THE SPACE PROVIDED ABOVE.
AT WHICH SEARS STORE IS YOUR ACCOUNT CARRIED? ____________
(DO NOT SEND IDENTIFICATION CARD OR PLATE)

Signature of the Head of Household ____________________
(WRITE—DO NOT PRINT)

		Dollars	Cents
TOTAL FOR GOODS			
← AMOUNT FOR TAX			
If credit order, we will figure and fill this in for you	POSTAGE		
Amount I owe Sears on previous order			
TOTAL CASH PRICE			
AMOUNT ENCLOSED	Sears Checks		68
	Money Order or Check		

Total Pounds | Total Ounces

Total Weight in Pounds

Enter Parcel Post Zone No.

See yellow pages for shipping information

E

Sears 665

Practical Application

Send Mail Orders to:
SEARS, ROEBUCK AND CO.
495 N. Watkins
Memphis, Tennessee 38102

OR, use this handy form when you place your order by phone or in person at Sears Catalog Sales Office, Sears Retail Catalog Dept. or Sears Authorized Catalog Sales Merchant.

Sears

Date____________________19___

PLEASE BE SURE TO INCLUDE ZIP CODE IN YOUR ADDRESS

PLEASE DO NOT WRITE IN THIS SPACE

%2-0-_______ - _______ CR
NO. ORDERS BATCH NO.

%3-0- - - -5- - & CR
OP. NO. OR. NO. NO. LN. TP. SL. MTH. SHP. ADJ. CASH

⋈ ⋈ & - CR
ACCT. NO. TERMS CONT. LIFE DEF. CODE

/E - - - CR
Brch CODE SHIP CHGE. TAX % ZONE

All members of the same household should order under on name

PLEASE PRINT PLAINLY ONE LETTER IN EACH SQUARE

MY SEARS CREDIT ACCOUNT NUMBER IS: ⋈ ________________

PLEASE DO NOT WRITE IN THIS SPACE ⋈____&____-____

NAME — __________________________ &

Mailing Address __________________________ &

Post Office________________ State________

Telephone No.________________ Zip Code________ CR

PLEASE DO NOT WRITE IN THIS SPACE

SHIP TO ANOTHER ADDRESS? If you want this order shipped to another person or to a different address, freight or express station, give address here:

Name__________________________

Mailing Address__________________________

Post Office____________ State____________ Zip Code________

IF YOUR ADDRESS HAS CHANGED since last order, please give your old mailing address here:

Mailing Address__________________________

Post Office____________ State____________ Zip Code________

STATE COLOR OR PATTERN CHOICE BY NUMBER WHERE REQUESTED

	CATALOG NUMBER		HOW MANY	NAME OF ITEM		COLOR NO. Pattern, Finish, Etc.	SIZE Measure to be sure	PRICE Ea., Yd., Pr., Etc.			TOTAL PRICE Dollars	TOTAL PRICE Cents	SHPG. WT. Lbs.	SHPG. WT. Oz.
1		—			—					&				
2		—			—					&				
3		—			—					&				
4		—			—					&				
5		—			—					&				
6		—			—					&				
7		—			—					&				
8		—			—					&				
9		—			—					&				
10		—			—					&				

LOUISIANA customers add 2c tax for each dollar of goods.
LOUISIANA customers also add local tax if required by your city or parish.
ARKANSAS, MISSOURI or TENNESSEE customers add 3c tax for each dollar of goods.
TENNESSEE customers also add 1c or 1½c county tax if applicable.
ALABAMA customers add 4c tax for each dollar of goods.
MISSISSIPPI or KENTUCKY customers add 5c for each dollar of goods.
Tax rates based on information available at printing and subject to change.

	Dollars	Cents
TOTAL FOR GOODS		
← AMOUNT FOR TAX		
If credit order, we will figure and fill this in for you POSTAGE		
Amount I owe Sears on previous order		
TOTAL CASH PRICE		
AMOUNT ENCLOSED: Sears Checks		
AMOUNT ENCLOSED: Money Order or Check		

Total Pounds | Total Ounces

Total Weight in Pounds

Enter Parcel Post Zone No.

See other side for shipping information

HOW SHALL WE SHIP? Parcel Post ☐ Express ☐ Freight (Rail or Truck) ☐

Add this order to my **REVOLVING CHARGE ACCOUNT** ☐
EASY PAYMENT PLAN ACCOUNT ☐
MODERNIZING CREDIT PLAN ACCOUNT ☐

Do not send identification card or plate

ENTER ACCOUNT NUMBER IN THE SPACE PROVIDED ABOVE.
AT WHICH SEARS STORE IS YOUR ACCOUNT CARRIED? ________________

Signature of the Head of Household__________________________
(WRITE—DO NOT PRINT)

E
EF6033 5:70
Printed in U.S.A.

D. Banking

Exercises

Assume your bank balance on the 1st of the month was $328.78. Using pages 207, 208, 209, write the checks, fill out the deposit slips, and check register for the following: Make checks to whomever you please. Be sure to state the reason each check was written.

Month	Day	Check or Deposit
______	2	Deposited $50.70
______	3	Checks for $5.06, $10.50, $15.00
______	7	Deposited $210.15, Checks $25.00 and $6.79
______	10	Checks $71.95 and $38.76
______	15	Check $19.95, Deposited $17.64 and $95.00
______	20	Deposited $17.50, Check for $225.00
______	29	Deposited $62.50

What is your bank balance at the end of the month?

How Much Money?

When Bill bought his lunch at school, it cost him half the money that he had brought from home. After school he bought a candy bar for 10 cents, and also had a snack at a diner. The snack cost half the money he had left. He left a five-cent tip at the diner.

Then Bill spent seven-eights of his remaining money on a magazine. When he reached home, he had a nickel in his pocket.

How much money did Bill have when he started out?

LITTLE RIVER Bank No.______

81-622
841

LEPANTO, ARKANSAS,______19____

PAY TO THE ORDER OF______$______

______DOLLARS

FOR______ ______

⑆0841⑉0622⑆

LITTLE RIVER Bank No.______

81-622
841

LEPANTO, ARKANSAS,______19____

PAY TO THE ORDER OF______$______

______DOLLARS

FOR______ ______

⑆0841⑉0622⑆

LITTLE RIVER Bank No.______

81-622
841

LEPANTO, ARKANSAS,______19____

PAY TO THE ORDER OF______$______

______DOLLARS

FOR______ ______

⑆0841⑉0622⑆

ENDORSE AND LIST EACH CHECK SEPARATELY

Member FDIC

	DOLLARS	CENTS
CURRENCY		
SILVER		

CHECKS AS FOLLOWS:

DEPOSIT TOTAL $ ______

LITTLE RIVER BANK

SAVINGS DEPARTMENT

ITEMS RECEIVED FOR DEPOSIT OR COLLECTION ARE ACCEPTED ON THE FOLLOWING TERMS AND CONDITIONS. THIS BANK ACTS ONLY AS DEPOSITOR'S COLLECTING AGENT AND ASSUMES NO RESPONSIBILITY BEYOND ITS EXERCISE OF DUE CARE. ALL ITEMS ARE CREDITED SUBJECT TO FINAL PAYMENT AND TO RECEIPT OF PROCEEDS OF FINAL PAYMENT IN CASH OR SOLVENT CREDITS BY THIS BANK AT ITS OWN OFFICE. THIS BANK MAY FORWARD ITEMS TO CORRESPONDENTS AND SHALL NOT BE LIABLE FOR DEFAULT OR NEGLIGENCE OF CORRESPONDENTS SELECTED WITH DUE CARE NOR FOR LOSSES IN TRANSIT, AND EACH CORRESPONDENT SHALL NOT BE LIABLE EXCEPT FOR ITS OWN NEGLIGENCE. ITEMS AND THEIR PROCEEDS MAY BE HANDLED BY ANY FEDERAL RESERVE BANK IN ACCORDANCE WITH APPLICABLE FEDERAL RESERVE RULES, AND BY THIS BANK OR ANY CORRESPONDENT IN ACCORDANCE WITH ANY COMMON BANK USAGE, WITH ANY PRACTICE OR PROCEDURE THAT A FEDERAL RESERVE BANK MAY USE OR PERMIT ANOTHER BANK TO USE, OR WITH ANY OTHER LAWFUL MEANS. THIS BANK MAY CHARGE BACK AT ANY TIME PRIOR TO MIDNIGHT ON ITS BUSINESS DAY NEXT FOLLOWING THE DAY OF RECEIPT ANY ITEM DRAWN ON THIS BANK WHICH IS ASCERTAINED TO BE DRAWN AGAINST INSUFFICIENT FUNDS OR OTHERWISE NOT GOOD OR PAYABLE. AN ITEM RECEIVED AFTER THIS BANK'S REGULAR AFTERNOON CLOSING HOUR SHALL BE DEEMED RECEIVED THE NEXT BUSINESS DAY.

DATE ______________________ 19____

ACCOUNT OF

____

____

ACCOUNT NO. ☐

[illegible]

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

ENDORSE AND LIST EACH CHECK SEPARATELY

Member FDIC

	DOLLARS	CENTS
CURRENCY		
SILVER		

CHECKS AS FOLLOWS:

DEPOSIT TOTAL $ ______

LITTLE RIVER BANK

SAVINGS DEPARTMENT

ITEMS RECEIVED FOR DEPOSIT OR COLLECTION ARE ACCEPTED ON THE FOLLOWING TERMS AND CONDITIONS. THIS BANK ACTS ONLY AS DEPOSITOR'S COLLECTING AGENT AND ASSUMES NO RESPONSIBILITY BEYOND ITS EXERCISE OF DUE CARE. ALL ITEMS ARE CREDITED SUBJECT TO FINAL PAYMENT AND TO RECEIPT OF PROCEEDS OF FINAL PAYMENT IN CASH OR SOLVENT CREDITS BY THIS BANK AT ITS OWN OFFICE. THIS BANK MAY FORWARD ITEMS TO CORRESPONDENTS AND SHALL NOT BE LIABLE FOR DEFAULT OR NEGLIGENCE OF CORRESPONDENTS SELECTED WITH DUE CARE NOR FOR LOSSES IN TRANSIT, AND EACH CORRESPONDENT SHALL NOT BE LIABLE EXCEPT FOR ITS OWN NEGLIGENCE. ITEMS AND THEIR PROCEEDS MAY BE HANDLED BY ANY FEDERAL RESERVE BANK IN ACCORDANCE WITH APPLICABLE FEDERAL RESERVE RULES, AND BY THIS BANK OR ANY CORRESPONDENT IN ACCORDANCE WITH ANY COMMON BANK USAGE, WITH ANY PRACTICE OR PROCEDURE THAT A FEDERAL RESERVE BANK MAY USE OR PERMIT ANOTHER BANK TO USE, OR WITH ANY OTHER LAWFUL MEANS. THIS BANK MAY CHARGE BACK AT ANY TIME PRIOR TO MIDNIGHT ON ITS BUSINESS DAY NEXT FOLLOWING THE DAY OF RECEIPT ANY ITEM DRAWN ON THIS BANK WHICH IS ASCERTAINED TO BE DRAWN AGAINST INSUFFICIENT FUNDS OR OTHERWISE NOT GOOD OR PAYABLE. AN ITEM RECEIVED AFTER THIS BANK'S REGULAR AFTERNOON CLOSING HOUR SHALL BE DEEMED RECEIVED THE NEXT BUSINESS DAY.

DATE ______________________ 19____

ACCOUNT OF

____

____

ACCOUNT NO. ☐

[illegible]

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

ENDORSE AND LIST EACH CHECK SEPARATELY

Member FDIC

	DOLLARS	CENTS
CURRENCY		
SILVER		

CHECKS AS FOLLOWS:

DEPOSIT TOTAL $ ______

LITTLE RIVER BANK

SAVINGS DEPARTMENT

ITEMS RECEIVED FOR DEPOSIT OR COLLECTION ARE ACCEPTED ON THE FOLLOWING TERMS AND CONDITIONS. THIS BANK ACTS ONLY AS DEPOSITOR'S COLLECTING AGENT AND ASSUMES NO RESPONSIBILITY BEYOND ITS EXERCISE OF DUE CARE. ALL ITEMS ARE CREDITED SUBJECT TO FINAL PAYMENT AND TO RECEIPT OF PROCEEDS OF FINAL PAYMENT IN CASH OR SOLVENT CREDITS BY THIS BANK AT ITS OWN OFFICE. THIS BANK MAY FORWARD ITEMS TO CORRESPONDENTS AND SHALL NOT BE LIABLE FOR DEFAULT OR NEGLIGENCE OF CORRESPONDENTS SELECTED WITH DUE CARE NOR FOR LOSSES IN TRANSIT, AND EACH CORRESPONDENT SHALL NOT BE LIABLE EXCEPT FOR ITS OWN NEGLIGENCE. ITEMS AND THEIR PROCEEDS MAY BE HANDLED BY ANY FEDERAL RESERVE BANK IN ACCORDANCE WITH APPLICABLE FEDERAL RESERVE RULES, AND BY THIS BANK OR ANY CORRESPONDENT IN ACCORDANCE WITH ANY COMMON BANK USAGE, WITH ANY PRACTICE OR PROCEDURE THAT A FEDERAL RESERVE BANK MAY USE OR PERMIT ANOTHER BANK TO USE, OR WITH ANY OTHER LAWFUL MEANS. THIS BANK MAY CHARGE BACK AT ANY TIME PRIOR TO MIDNIGHT ON ITS BUSINESS DAY NEXT FOLLOWING THE DAY OF RECEIPT ANY ITEM DRAWN ON THIS BANK WHICH IS ASCERTAINED TO BE DRAWN AGAINST INSUFFICIENT FUNDS OR OTHERWISE NOT GOOD OR PAYABLE. AN ITEM RECEIVED AFTER THIS BANK'S REGULAR AFTERNOON CLOSING HOUR SHALL BE DEEMED RECEIVED THE NEXT BUSINESS DAY.

DATE ______________________ 19____

ACCOUNT OF

____

____

ACCOUNT NO. ☐

[illegible]

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

CHECK REGISTER

CHECK NO	DATE	CHECK ISSUED TO	AMOUNT OF CHECK		✓	DATE OF DEP	AMOUNT OF DEPOSIT		BALANCE	

Exercises

STATEMENT OF ACCOUNT

U. R. Took
711 West Ave. D
Hope, Ark. 71801

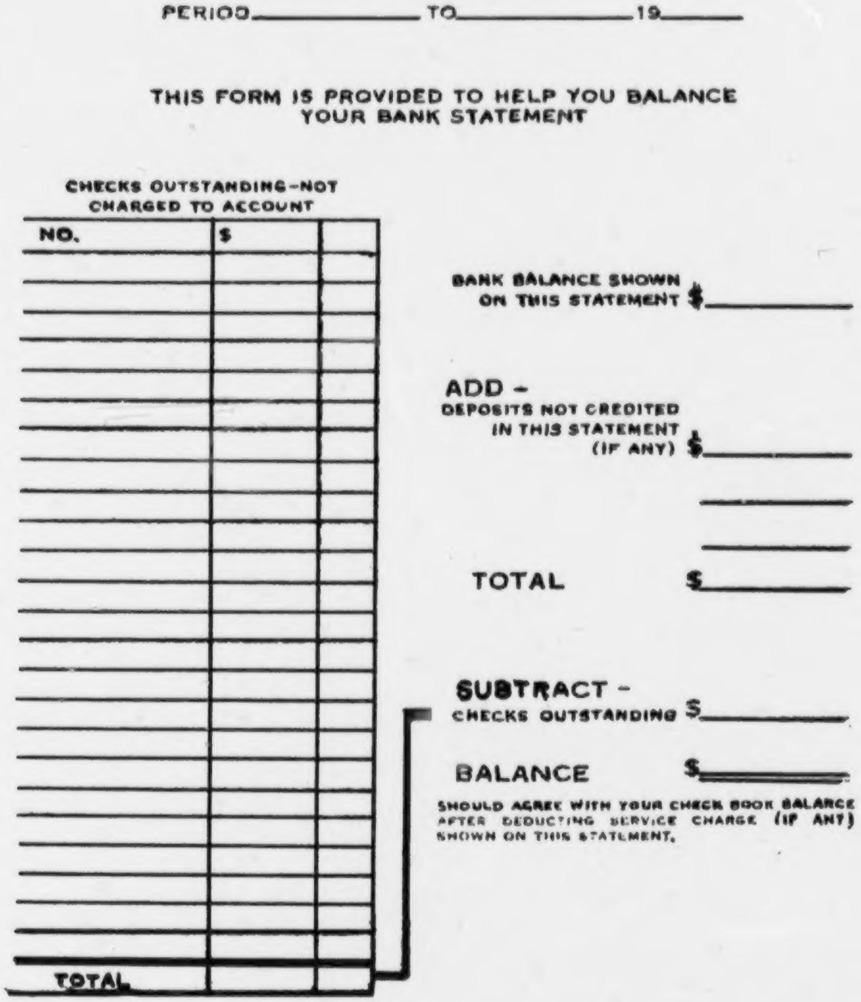
Checks	Deposits	Date	Balance
Balance brought forward	$ 395.45	11-1-71	
$ 23.49-		11-2-71	
7.83- 2.93-		11-5-71	
121.23-	101.01+	11-8-71	
40.00-		11-11-71	
12.49- 7.85-		11-15-71	
79.38-	240.38+	11-18-71	
32.45- 16.34-		11-19-71	
11.23-		11-20-71	
236.70-		11-23-71	
78.34-		11-24-71	
4.46-		11-26-71	
38.39- 2.98-		11-28-71	
	240.38+	11-30-71	

FIND THE BALANCE AT THE END OF EACH DAY

CITIZENS NATIONAL
Bank
HOPE, ARKANSAS

Exercises

Balance Your Bank Statement



PERIOD ____________ TO ____________ 19______

THIS FORM IS PROVIDED TO HELP YOU BALANCE YOUR BANK STATEMENT

CHECKS OUTSTANDING-NOT CHARGED TO ACCOUNT

NO.	$	
TOTAL		

BANK BALANCE SHOWN ON THIS STATEMENT $__________

ADD - DEPOSITS NOT CREDITED IN THIS STATEMENT (IF ANY) $__________

____

____

TOTAL $__________

SUBTRACT - CHECKS OUTSTANDING $__________

BALANCE $__________

SHOULD AGREE WITH YOUR CHECK BOOK BALANCE AFTER DEDUCTING SERVICE CHARGE (IF ANY) SHOWN ON THIS STATEMENT.

Statement of Account - U. R. Took

The bank balance shown on this statement is the one obtained on page 209.

These checks have been written but not cleared:

#206	$18.34
#211	$ 3.09
#212	$53.61
#215	$69.37
#219	$21.63

How much is the new balance?

Exercises

$25 Bond - Maturity Value of Bonds Bought After June 1, 1970	
PERIOD HELD	REDEMPTION VALUE
First 1/2 year	$18.75
1/2 to 1 year	19.05
1 year to 1 1/2 year	19.51
1 1/2 year to 2 years	19.95
2 years to 2 1/2 years	20.40
2 1/2 years to 3 years	20.88
3 years to 3 1/2 years	21.39
3 1/2 years to 4 years	21.93
4 years to 4 1/2 years	22.53
4 1/2 years to 5 years	23.16
5 years to 5 1/2 years	23.82
5 1/2 years to 5 years 10 months	24.51
5 years 10 months from issue date	25.73

Note: "E" Bonds have a 1/2% bonus rate added if held to maturity, raising the yield to 5 1/2% from issue date to maturity.

You are saving $6.25 per month on a payroll savings plan.

1. How many months until you can buy a $25 savings bond?

2. In 2 years how much would you have saved?

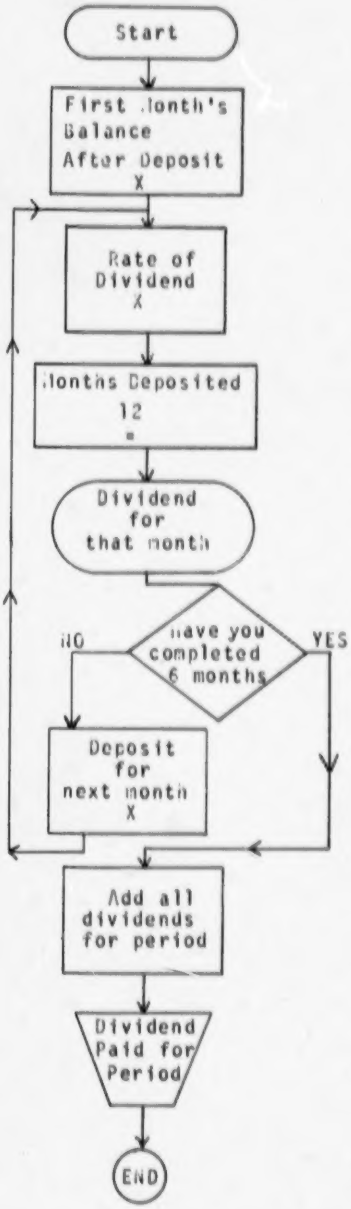
3. If you started on January 1, 1971, when will you buy your first bond?

4. (a) Find the number of years and months from time bought to January 1, 1973 for each bond bought.
   (b) Find the accumulated value of each of these bonds you have bought using the redemption value table.

Date Bought	Years and Months to Jan. 1, 1973	Accumulated Value
March 1, 1971	____________	____________
June 1, 1971	____________	____________
September 1, 1971	____________	____________
December 1, 1971	____________	____________
March 1, 1972	____________	____________
June 1, 1972	____________	____________
September 1, 1972	____________	____________
December 1, 1972	____________	____________

5. How much interest has been earned?

Exercises


Start
First Month's Balance After Deposit
X
Rate of Dividend
X
Months Deposited
12
=
Dividend for that month
Have you completed 6 months
NO
YES
Deposit for next month
X
Add all dividends for period
Dividend Paid for Period
END

You put \$6.25 into a savings account on the first of each month for 2 years starting January 1, 1971

How dividends are computed:

$6.25 \times .0475 \times \frac{6}{12} = .148437$ $\quad$ $6.25 \times .0475 \times \frac{3}{12} = .074218$

$6.25 \times .0475 \times \frac{5}{12} = .123697$ $\quad$ $6.25 \times .0475 \times \frac{2}{12} = .049479$

$6.25 \times .0475 \times \frac{4}{12} = .098958$ $\quad$ $6.25 \times .0475 \times \frac{1}{12} = .024739$

.519528

Do not round off dividends until after you add.

1. What is the rate of dividend?
2. Amount of dividend earned for March deposit?
3. Total dividends first six mo.

Continue finding dividends on deposits through December 31, 1972 and record on next page.

4. Second six months
5. Third six months.
6. Fourth six months

What is "first month's balance after deposit" for:

7. July, 1971
8. January, 1972
9. July, 1972
10. What is my balance after dividend for:

    December, 1972
11. What was total earnings on savings account?
12. Which earned more--savings account or savings bond?
13. How much more?

Date	Memo.	Earnings Dividend	Withdrawals	Savings Added	Balance
1 Jan. 1, 71				$6.25	6.25
2 Feb. 1, 71				6.25	12.50
3 Mar. 1, 71				6.25	18.75
4 April 1, 71				6.25	25.00
5 May 1, 71				6.25	31.25
6 June 1, 71				6.25	37.50
7 June 30, 71	Dividend 4 3/4%	$.52			38.02
8 July 1, 71				6.25	44.27
9 Aug. 1, 71					
10 Sept. 1, 71					
11 Oct. 1, 71					
12 Nov. 1, 71					
13 Dec. 1, 71					
14 Dec. 31, 71	Dividend 4 3/4%				
15 Jan. 1, 72					
16 Feb. 1, 72					
17 Mar. 1, 72					
18 April 1, 72					
19 May 1, 72					
20 June 1, 72					
21 June 30, 72	Dividend 4 3/4%				
22 July 1, 72					
23 Aug. 1, 72					
24 Sept. 1, 72					
25 Oct. 1, 72					
26 Nov. 1, 72					
27 Dec. 1, 72					
28 Dec. 31, 72	Dividend 4 3/4%				

FEDERAL DEPOSIT INSURANCE CORPORATION
$10,000 MAXIMUM INSURANCE FOR EACH DEPOSITOR
MEMBER

FIRST NATIONAL
Trust and
Savings Bank

E. Car Expenses

Expenses

Cost of Operating a Second Hand Car

Don Jones:
1967 Buick Wildcat
11825 miles

Expenses:

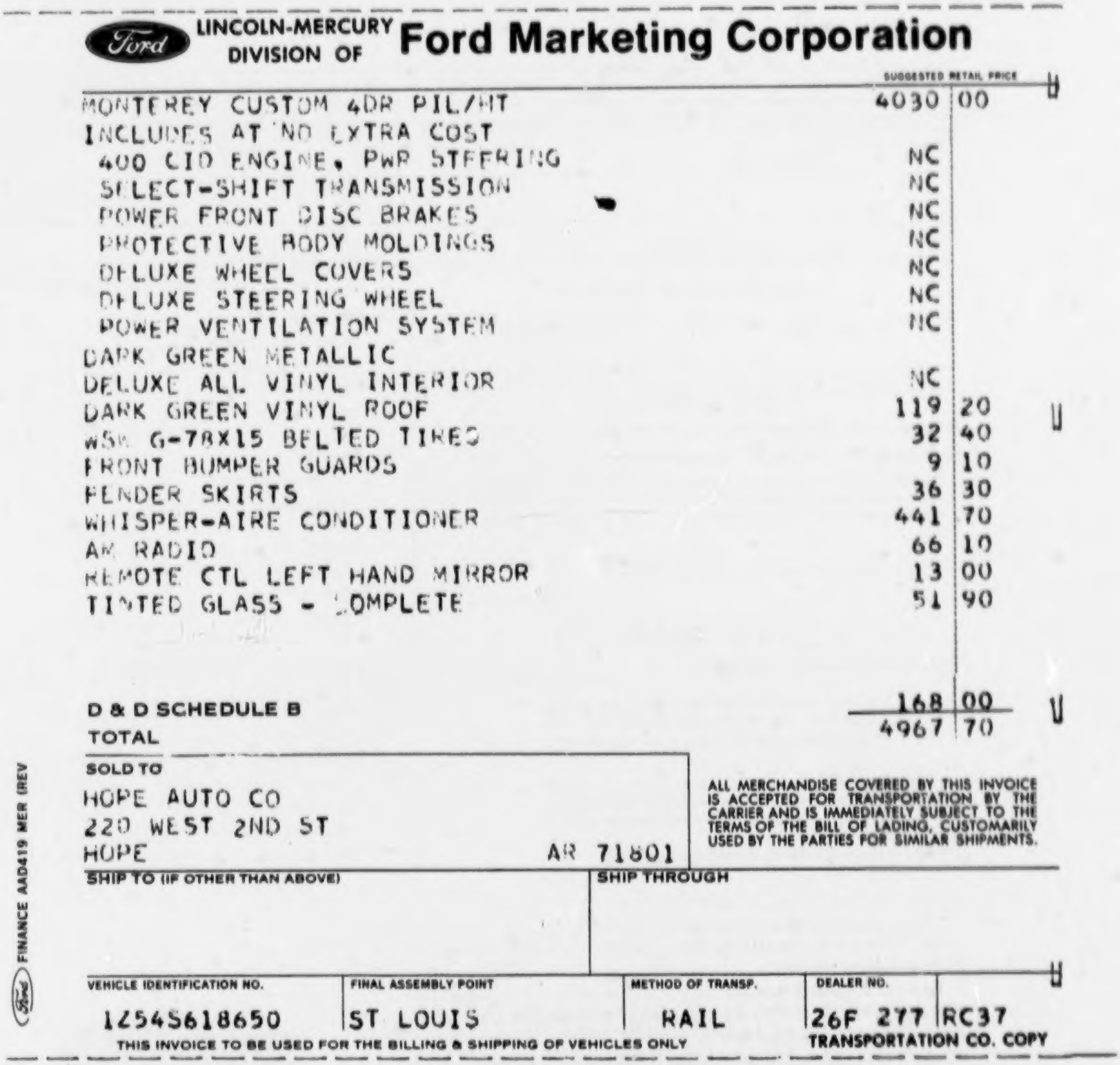
947 gal. gas	at	$.339	______
43 qts. oil	at	.55	______
9 lube jobs	at	1.50	______
2 oil filters	at	2.85	______
1 air filter	at	3.65	______
2 head lamps	at	.88	______
1 muffler	at	9.88	______
1 tail pipe	at	5.25	______
8 spark plugs	at	1.03	______
2 sets points	at	1.05	______
2 tires	at	21.45	______
1 battery	at	18.95	______
2 battery cables	at	1.00	______
4 spinner hubcaps	at	7.95	______
2 rear view mirrors	at	3.25	______

Sub Total ______

License - State $19.00
City 5.00
Driver's 2.00 ______
Depreciation $450.00 ______
Interest on bank loan
$1000 at 5.5% $55.00 ______
Insurance - Comprehensive (5-10-5) $208.00 ______
Repair--minor wreck $98.47 ______
Seven flats at $1.25

Total ______

Average cost per mile ______



LINCOLN-MERCURY DIVISION OF **Ford Marketing Corporation**

	SUGGESTED RETAIL PRICE	
MONTEREY CUSTOM 4DR PIL/HT	4030	00
INCLUDES AT NO EXTRA COST		
400 CID ENGINE, PWR STEERING	NC	
SELECT-SHIFT TRANSMISSION	NC	
POWER FRONT DISC BRAKES	NC	
PROTECTIVE BODY MOLDINGS	NC	
DELUXE WHEEL COVERS	NC	
DELUXE STEERING WHEEL	NC	
POWER VENTILATION SYSTEM	NC	
DARK GREEN METALLIC		
DELUXE ALL VINYL INTERIOR	NC	
DARK GREEN VINYL ROOF	119	20
WSW G-78X15 BELTED TIRES	32	40
FRONT BUMPER GUARDS	9	10
FENDER SKIRTS	36	30
WHISPER-AIRE CONDITIONER	441	70
AM RADIO	66	10
REMOTE CTL LEFT HAND MIRROR	13	00
TINTED GLASS - COMPLETE	51	90
D & D SCHEDULE B	168	00
TOTAL	4967	70

SOLD TO

HOPE AUTO CO
220 WEST 2ND ST
HOPE AR 71801

ALL MERCHANDISE COVERED BY THIS INVOICE IS ACCEPTED FOR TRANSPORTATION BY THE CARRIER AND IS IMMEDIATELY SUBJECT TO THE TERMS OF THE BILL OF LADING, CUSTOMARILY USED BY THE PARTIES FOR SIMILAR SHIPMENTS.

SHIP TO (IF OTHER THAN ABOVE)

SHIP THROUGH

VEHICLE IDENTIFICATION NO.	FINAL ASSEMBLY POINT	METHOD OF TRANSP.	DEALER NO.	
1Z54S618650	ST LOUIS	RAIL	26F 277	RC37

THIS INVOICE TO BE USED FOR THE BILLING & SHIPPING OF VEHICLES ONLY

TRANSPORTATION CO. COPY

FINANCE AAD419 MER (REV

Use the Dealer Statement of Transaction blank to complete the papers for the purchase of a car based on the following facts.

a. Down payment $550
b. Trade in $1450 - (68 Mustang)
c. Comprehensive insurance $335
d. Finance charges and credit life is 5.8% of the principal amount financed
e. 3% sales tax and $19.00 license

ACCOUNT NO.__________ **ARKANSAS AUTOMOBILE RETAIL INSTALMENT CONTRACT** DATE__________

Buyer (and Co-Buyer) - Name and Address (Include - County and Zip Code)	Seller - Name and Address

Buyer (which means the undersigned Buyers and Co-Buyers, jointly and severally) having been quoted both a time sale price and a lesser cash price hereby purchases from Seller on a time price basis, upon the terms and conditions set forth on the face and reverse sides hereof, the following property (hereinafter called the "Property") delivery and acceptance of which in good order hereby are acknowledged by Buyer.

New or Used	Year and Make	Series	Body Style	No. Cyl.	If Truck Ton Capacity	Manufacturer's Serial Number	Use For Which Purchased
							☐ Personal ☐ Agriculture ☐ Business ☐

INCLUDING:
☐ Radio ☐ Air Conditioner ☐ Automatic Transmission ☐ Power Steering ☐ Power Brakes ☐ Power Seats ☐ Power Windows ☐ __________

DESCRIPTION OF TRADE IN

__________ (Year and Make) $__________ (Gross Allowance)

__________ (Serial Number) $__________ (Amount Owing)

OPTIONAL INSURANCE

Buyer authorizes Seller to obtain the following insurance coverages:

(a) Automobile Physical Damage Insurance: Coverages checked below for a term of _____ months (or for such shorter term as the insurer to whom Seller shall apply therefor will provide for the amount included herein) from the date hereof, payable to Buyer or Seller as interests may appear:

☐ Comprehensive ☐ Fire-Theft & Combined Additional Coverage

☐ $_____ Deductible Collision ☐ Towing & Labor Costs ($25.00 Limit)

$__________ (a)

(b) Credit Life Insurance on the life of __________ (Insured Person)

☐ Provided under Ford Life Insurance Company's Group Policy No. 2200 in accordance with the "Credit Life Insurance Eligibility" section below.

☐ Provided by __________ in accordance with the separate Application, Notice, Certificate or Policy delivered to Buyer this date.

$__________ (b)

(c) Credit Accident and Health Insurance provided by

____

in accordance with the separate Application, Notice, Certificate or Policy delivered to Buyer this date ...... $__________ (c)

(d) Other Optional Insurance __________ (Itemize) $__________ (d)

Total Cost of Optional Insurance .... $__________

NOTICE TO BUYER: (1) You are not required to obtain the Credit Life and/or Credit Accident and Health Insurance for which a charge is indicated above and such is not a factor in the Seller's approval of this credit. (2) You have the right to choose the person through whom the Automobile Physical Damage Insurance required under this contract is to be obtained. ACKNOWLEDGING the foregoing, BUYER requests and authorizes SELLER to obtain each insurance coverage for which an amount is included above.

Buyer __________ Date__________ (Cost of Insurance to be included only if signed and dated by Buyer)

DETAILS OF TRANSACTION

(1) Cash Price		$__________	(1)
Cash Down Payment	$__________		
Trade In (See Opposite)	$__________		
(2) Total Down Payment		$__________	(2)
(3) Unpaid Balance of Cash Price (Difference between Items 1 & 2)		$__________	(3)
(4) Other Charges			
Optional Insurance (See Opposite)	$__________		
Official Fees	$__________		
Taxes (Not included in Cash Price)	$__________		
License, Title & Registration Fees	$__________		
Total Other Charges		$__________	(4)
(5) Unpaid Balance – Amount Financed		$__________	(5)
(6) FINANCE CHARGE		$__________	(6)
(7) ANNUAL PERCENTAGE RATE __________ %(7)			
(8) Total of Payments (Sum of Items 5 & 6)		$__________	(8)

(9) Payment Schedule: Buyer hereby agrees to pay to Seller the Total Payments (Item 8 above) in _____ monthly instalments of $__________ each and one final instalment of $__________ on the like day of each month commencing __________ 19_____, or, if no date is specified, one month after the date of this contract.

Ford

Exercises

Computing the cost of operating a new car

Name: Sam Bennett

Kind of Car: Plymouth Duster

Miles driven: 18,725

Expenses			Total
1440 gallons gas	at	$ .339	
36 quarts oil	at	.75	
9 lube jobs	at	1.50	
2 oil filters	at	2.70	
1 air filter	at	4.10	
License--State		$19.00	
Sales tax		$75.00	
Driver's license		2.00	
Depreciation		$850.00	
Interest on bank loan $2500 at 5.8%			
Insurance--comprehensive 10-20-5 (male--under 25)		$233.40	
		Total	

Average cost per mile: __________

F. Food Buys

WELCH'S

GRAPE JUICE

3 1 PT. 8-OZ BTLS. **$1.**

SPARE-TIME FROZEN

MEAT PIES

8 6-oz. For **$1**

SHURFINE ORANGE

JUICE

6 6-oz. For **$1**

WHOLE KERNEL

NIBLETS CORN...... 4 12-OZ. CANS **89¢**

CUT CORN OR CUT

OKRA

6 10-oz. For **$1**

EXERCISES

How many items are advertised on this page? ________

What is the price of 1 meat pie? ________

What is the price of 1 can of corn? ________

What is the price of 1 can of vienna sausage? ________

What is the price of 1 bottle of grape juice? ________

What is the price per ounce of Treet? ________

What is the price per ounce of okra? ________

What is the price per ounce of peanut butter? ________

One item is shown at two prices. At which price would it cost less per item?

Peanut Butter

Peter Pan Smooth or Crunchy ..... 12-Oz. Jar **39¢**

Sausage Armour Vienna **4** 5-Oz. Cans **89¢**

Orange Juice

Kroger Frozen Fresh from Florida ...... **3** 6-Oz. Cans **49**

TREET ***Armour's All Purpose Luncheon Meat .... 12-Oz. Can*** **49¢**

Exercises

Quantity and size	Item	Cost	Retail Cost Per Unit	Mark up Per Unit	% of Mark up
10/5#	C & H Sugar	$ 6.01	.59	______	______
6/10#	C & H Sugar	5.90	1.19	______	______
48/tall	Pet Milk	7.80	3/.53	______	______
10/qt.	Soap Powder	6.60	.71	______	______
24/1#	Folgers Coffee	18.80	.79	______	______
24/8oz.	Pillsbury Biscuits	1.72	3/.25	______	______
1-1/2 gal.	Foremost Milk		.51	______	______
24/4oz.	Gerber Baby Food	3.20	5/.59	______	______
10/5#	Pillsbury Flour	5.90	.67	______	______
24/2oz.	Martha White Corn Bread Mix	1.92	.10	______	______
4/6ct.	Can Coca Cola	2.40	.73	______	______
4/6ct.	One Way Pepsi	1.80	.55	______	______

SAFEWAY

© [illegible] Safeway Stores [illegible]

Exercises

Circle the better buys.

1.	"Cokes"	16 oz.	53¢ ctn.
		10 oz.	43¢ ctn.
		6 oz.	37¢ ctn.
2.	Lucerne Milk	1/2 gal. ctn.	53¢
		1 gal. ctn.	99¢
3.	Folger's Inst. Coffee	10 oz.	$1.79
		6 oz.	.99
		2 oz.	.49
4.	Town House Orange Juice	18 oz.	5/1.00
		1 qt. 14 oz.	.39
5.	Morrell Canned Ham	5 lb.	$5.49
		3 lb.	3.39
6.	Domino Sugar	5 lb.	.65
		10 lb.	1.19
7.	Hiway Peaches	1 lb. can	4/1.00
		1 lb 13 oz. can	3/1.00

SAFEWAY

8. Mrs. Wright's Biscuits 8 oz. can 3/25¢
4 oz. can 2/15¢

9. Nabisco Crackers 1/2 lb. box 27¢
1 lb. box 35¢
2 lb. box 67¢

10. Hormel Weiners 12 oz. pkg. 59¢
1 lb. pkg. 69¢

11. Campbell's Pork and Beans 1 lb. 6/1.00
1 lb.12 oz. 3/1.00

12. Pride of Illinois Corn 15 oz. 2/45¢
Highway Cream Corn 15. oz. 5/1.00

13. Mrs. Wright's Bread 20 oz. 3/73¢
Holsum Bread 1 lb. 31¢

14. Bel Air Frozen Corn 2 lbs. 59¢
Hills-of-Home Frozen Corn 1-1/2 lbs.39¢

15. Wrigley's Gum 5/19¢
Dentyne Gum 6/23¢

Exercises

Cost of Feeding a Family

1. This table shows the cost of feeding a family in the South for one week. Using the table and the adjustments, find the cost of feeding your family.

		SOUTH		
		LOW COST	MEDIUM COST	HIGH COST
CHILDREN UNDER 1 YEAR		2.80	3.50	3.90
	1 - 3 years. . .	3.40	4.20	4.90
	4 - 6 years. . .	3.90	5.10	6.20
	7 - 9 years. . .	4.70	6.10	7.10
	10 -12 years. . .	5.40	7.30	8.50
GIRLS	13 -15 years. . .	5.70	7.70	9.00
	16 -19 years. . .	5.80	7.70	9.10
BOYS	13 -15 years. . .	6.20	8.40	9.80
	16 -19 years. . .	7.20	9.80	11.30
WOMEN	20 -34 years. . .	4.80	6.70	7.90
	35 -54 years. . .	4.70	6.50	7.70
	55 -74 years. . .	4.40	6.20	7.30
	75 & over	4.30	5.80	6.80
MEN	20 -34 years. . .	6.30	8.50	9.90
	35 -54 years. . .	5.90	8.00	9.10
	55 -74 years. . .	5.60	7.60	8.70
	75 & over	5.40	7.30	8.40

IF YOU ARE USING A FAMILY OF 1 ADD 20%

2 ADD 10%

3 ADD 5%

4 USE AS IS

5 SUBTRACT 5%

6 OR MORE SUBTRACT 10%

2. Using a merchandising list, make up a grocery list for feeding a family of four for one week. Use a family of 4 including a father, mother, teen-ager, and one baby girl. Find the total cost.

3. Using the merchandising list on page 220, determine if it is always, sometimes, or never cheaper to buy the economy size.

Record Party

Time: 8:00p.m. Limited to 9 couples

Place: Betty's house Refreshments: cokes and spudnuts

Betty figures 2 cokes and 3 spudnuts per person. If cokes cost $1.72 per case and spudnuts cost 59¢ a dozen, what is the expected total cost of the party and how much is each person's share of the cost?

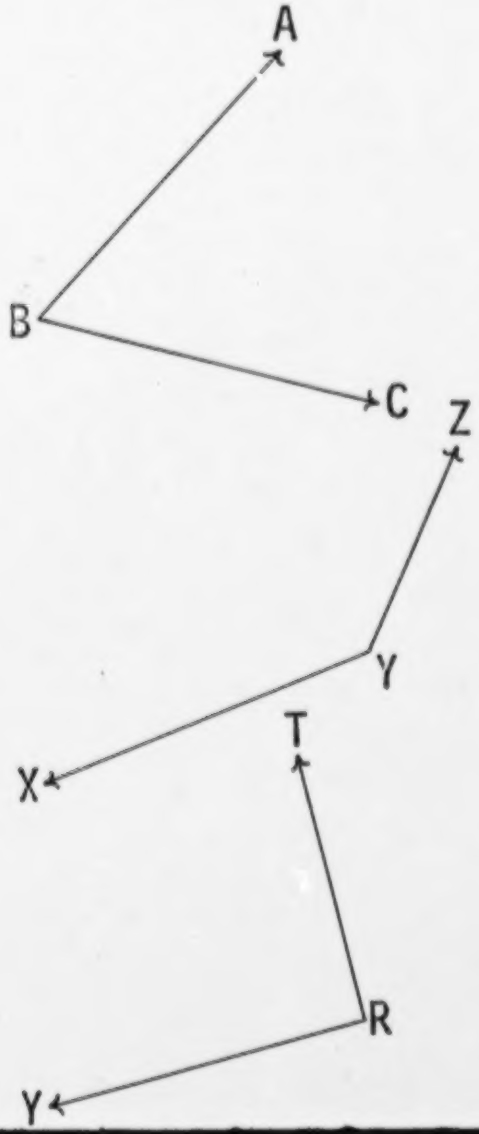
UNIT X

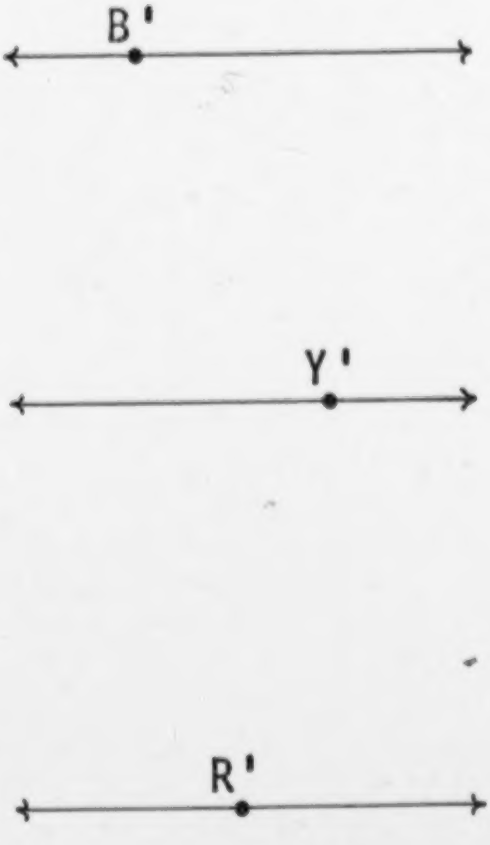
CONSTRUCTION

A. Congruent Angles

Exercises

Construct an angle congruent to each given angle.

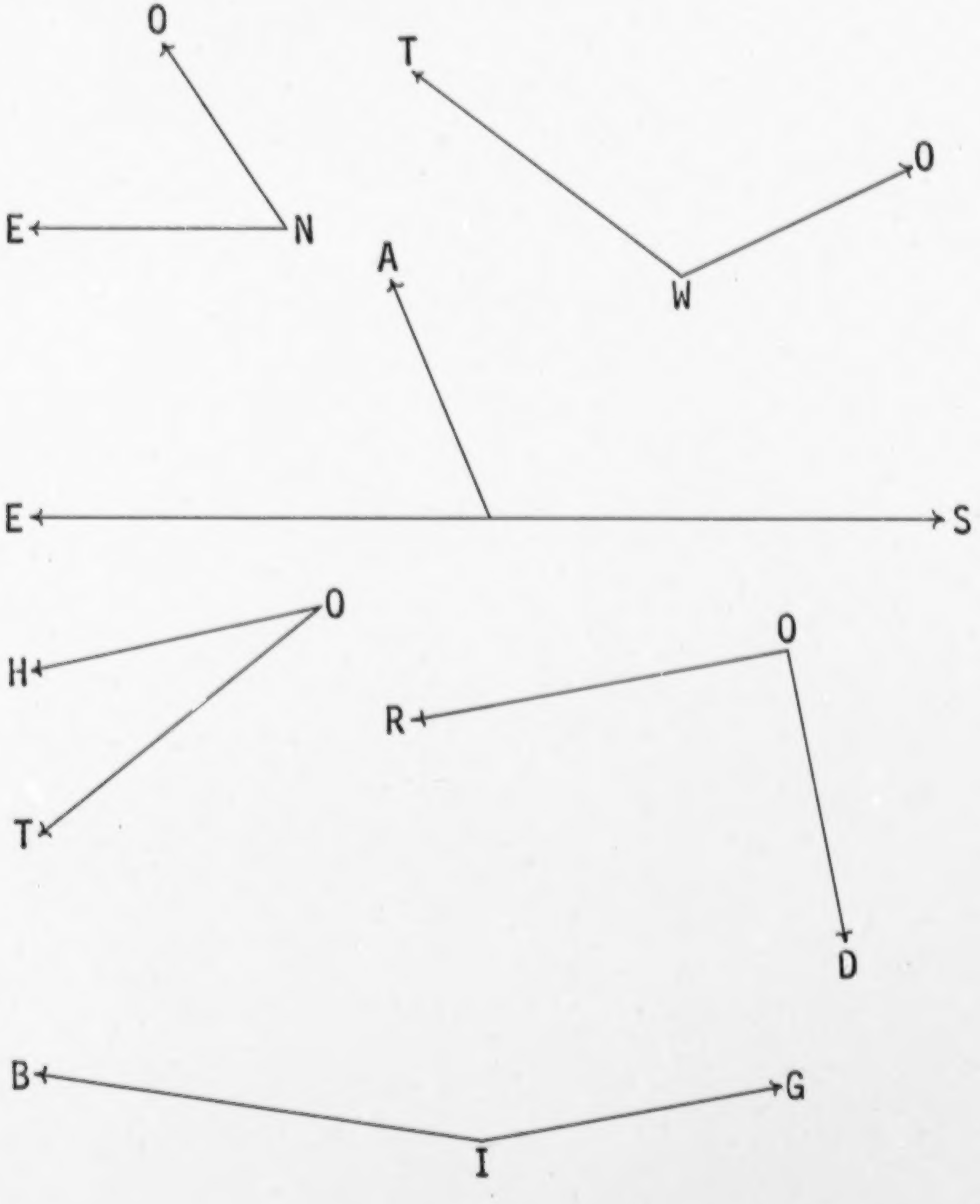




B. Angle Bisector

Exercises

Bisect each given angle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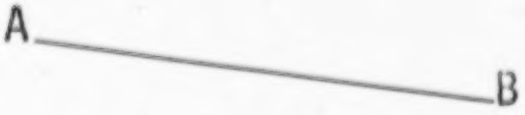
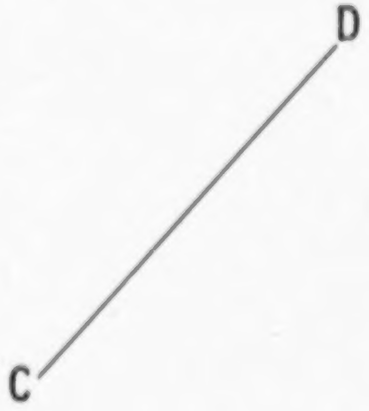
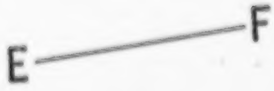
C. Perpendicular Bisector

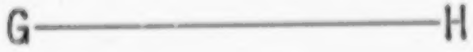
Exercises

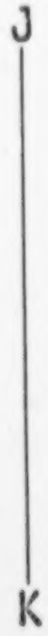
Construct a perpendicular bisector of each line segment.

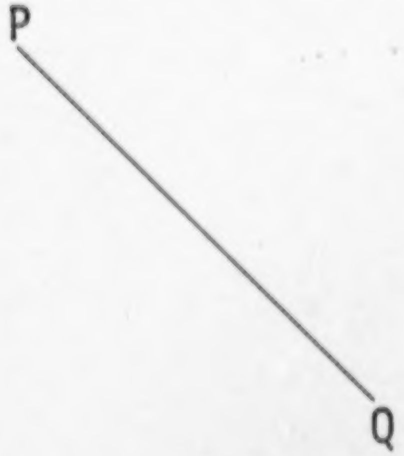






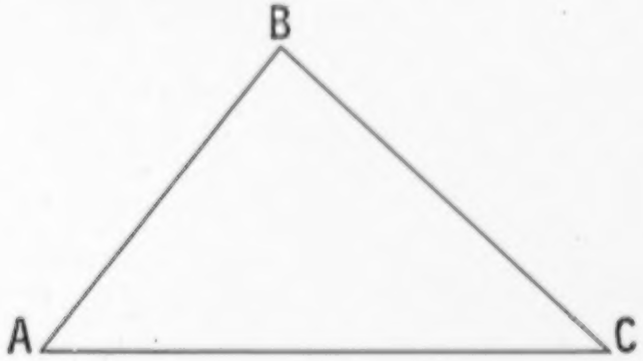


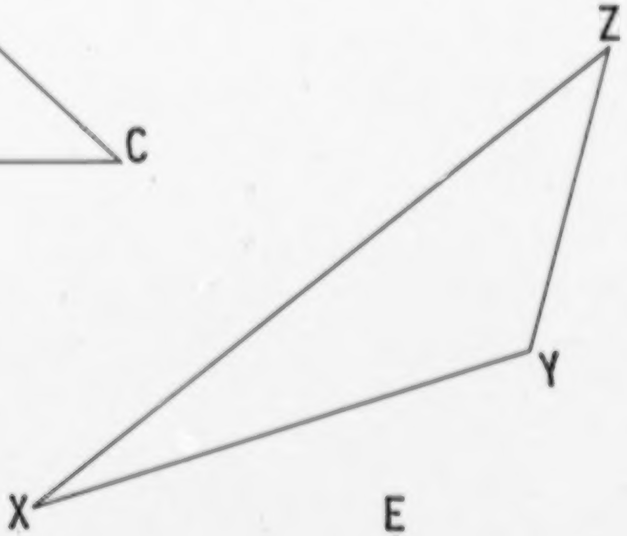


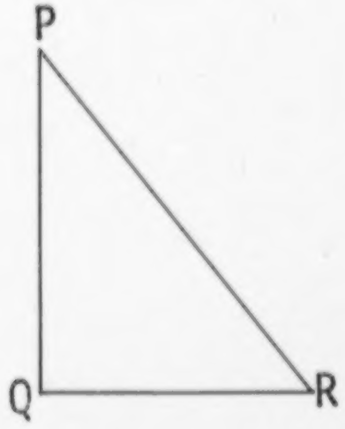


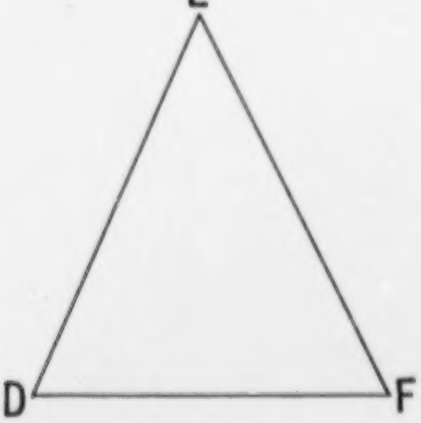
Exercises

Construct the perpendicular bisectors of all three sides of the triangles. Then use the point of intersection as the center and circumscribe circles about the triangles.





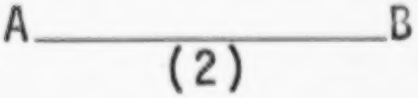


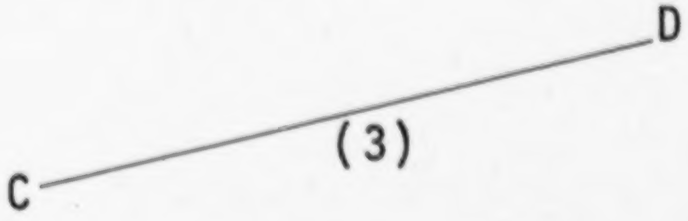


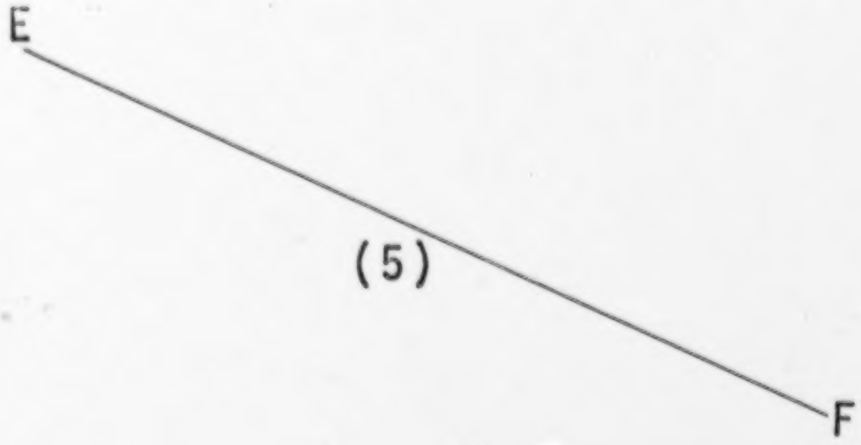
D. Equal Line Segments

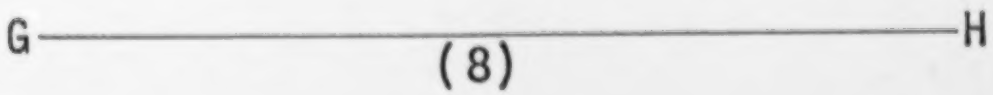
Exercises

Divide the lines into specified equal segments.





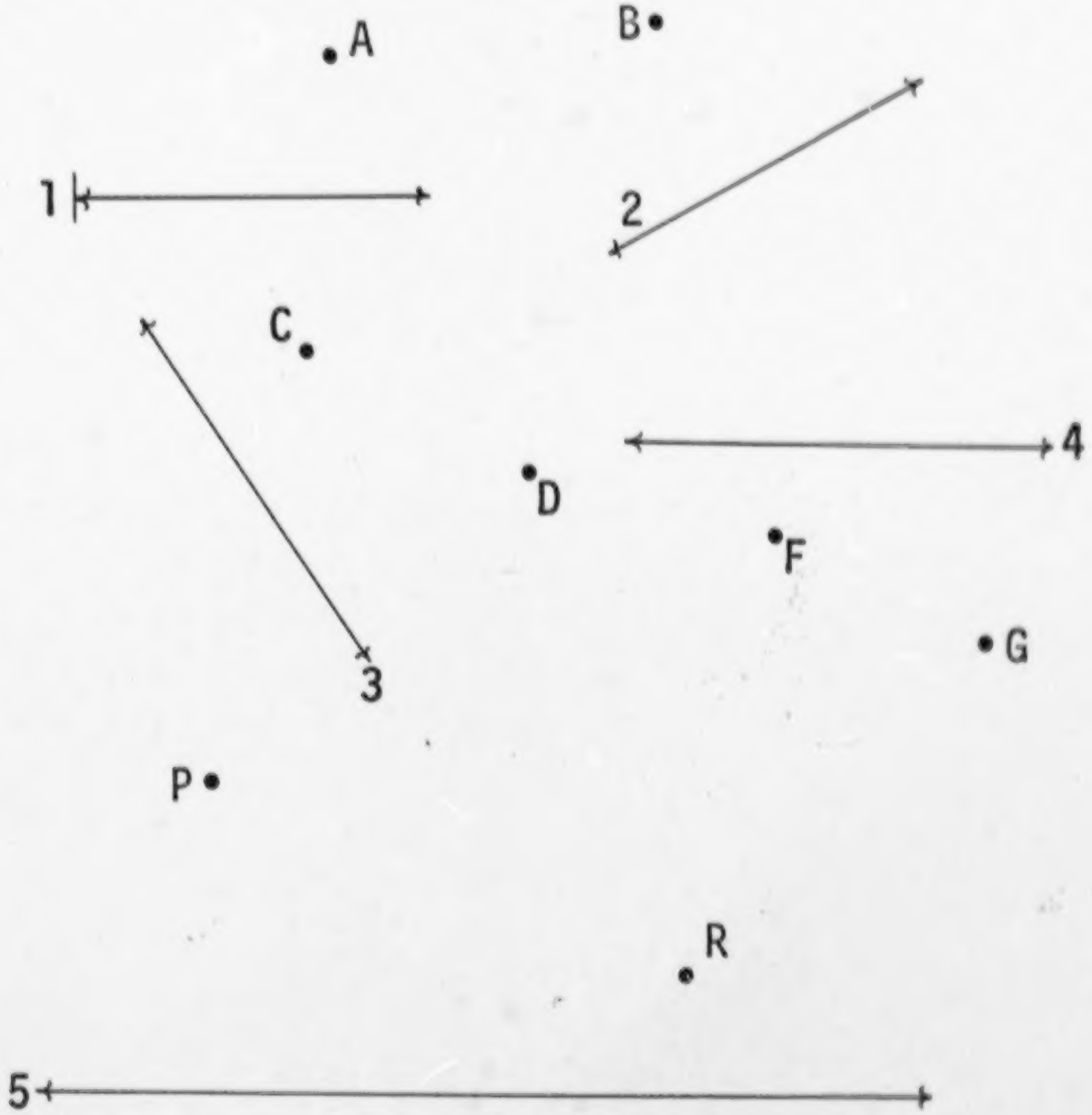




E. Perpendicular Lines

Exercises

Construct a perpendicular line through the given point or points to the given line.


A
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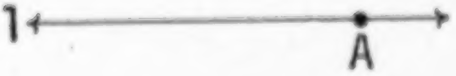
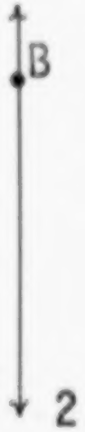
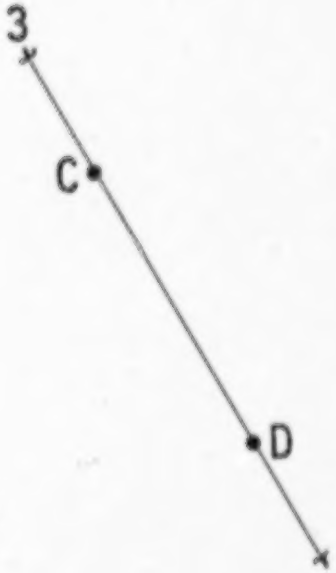
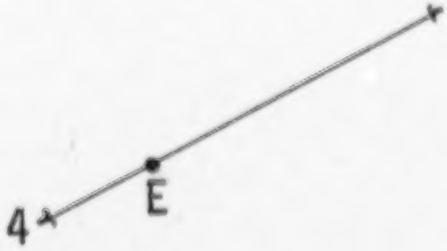
Exercises

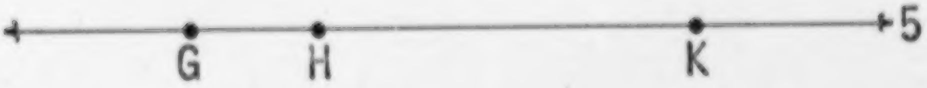
Construct lines perpendicular to each given line through the given points.











F. Parallel Lines

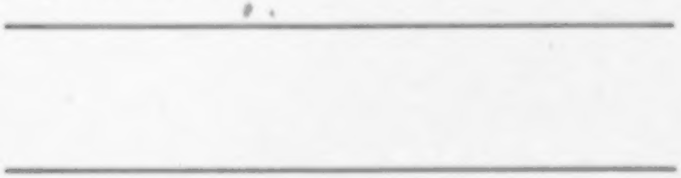
EXERCISES

1. Construct a line parallel to the given line by constructing equal alternate interior angles.

2. Construct a line parallel to the given line by constructing equal corresponding angles.

3. Construct a parallel line one inch from the given line by constructing a perpendicular to a perpendicular. (1" apart)

4. By construction, locate the center stripe of Arkansas Highway 1.



Highway 1

UNIT XI

STATISTICS

A. Probability

EXERCISES

1. Drop 4 circular discs on the table (one side red, one side blue).

   a. List all the different ways they can fall.

   b. List all the ways you get three red and one blue.

   c. What is the ratio of b. to a.?

2. What determines the number of possibilities?

3. Can you suggest a rule to go by to determine the expected number of possibilities?

4. Refer back to problem one. Find the probability of the event:

   a. "Four reds and no blues"
   b. "Two reds and two blues"
   c. "One red and three blues"
   d. "No reds and four blues"
   e. Compare the chances of events a., b., c., d.

5. A box contains 40 slips of paper. The slips are numbered from 1 through 40. A slip is drawn. What is the probability that the slip drawn will be marked with:

   a. A number less than 15?
   b. A number greater than 30?
   c. An off number?
   d. An even number?
   e. A multiple of 5?
   f. A multiple of 6?
   g. A number greater than 20?
   h. A number less than 5?
   i. The square of a counting number?
   j. A number ending in 5?
   k. A multiple of 18?
   l. A number which ends in 0?
   m. A number which is divisible by 12?
   n. A prime number?

Exercises

1. In a bowl of 12 red and 15 blue marbles, if one marble is drawn, replaced, and one marble again selected, what is the probability that:

   a. Both marbles are blue?
   b. Both marbles are red?
   c. The two marbles have different colors?
   d. The two marbles have the same color?
   e. The first marble is blue and the second red?
   f. The first marble is red and the second blue?
   g. Either marble is red?

2. Your football team is scheduled to play team A & team B. It is estimated that the probability of winning over A is 1/3 and over B is 3/4. Which is the stronger opponent?

   Who is favored in the game with A? Game with B? What is the probability of your team:

   a. Losing the second game?
   b. Losing the 1st game?
   c. Losing the 1st game and winning the second?
   d. Winning the 1st game and losing the second?
   e. Losing both games?
   f. Winning either game?

3. Basket contains 10 oranges and 6 apples.

   a. What are the chances of drawing an apple first draw?
   b. If you drew an apple the 1st draw and ate it, what is the chance of drawing an apple on the second draw?
   c. What is the probability of drawing an apple the first draw and an orange on the second draw, after replacing the apple? What about the probability of drawing an apple on the first draw and an orange on the second draw after the apple was eaten?

B. Charts and Graphs

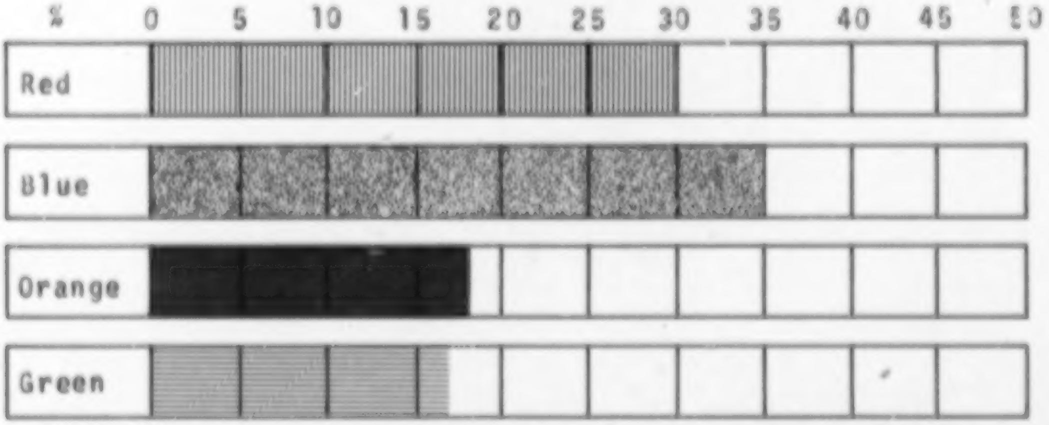
Example:
Take 5 cubes where each cube has 2 faces red, 2 faces blue, 1 face green, 1 face orange. Shake the five cubes and let them fall on the table. Record the number of each colored face that appears upward. Repeat your throw 20 times, giving a total of 100 faces recorded. There are several different ways to record this information.

Cube Throwing Chart

Trials	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	%
Red	1	2	3	2	0	1	1	1	0	3	2	1	1	4	2	1	2	0	1	2	30	30%
Blue	4	1	1	2	2	2	1	1	2	1	2	2	3	0	1	4	1	2	1	2	35	35%
Orange	0	2	1	0	2	2	1	0	0	1	0	0	1	1	2	0	2	2	1	0	18	18%
Green	0	0	0	1	1	0	2	3	3	0	1	2	0	0	0	0	0	1	2	1	17	17%

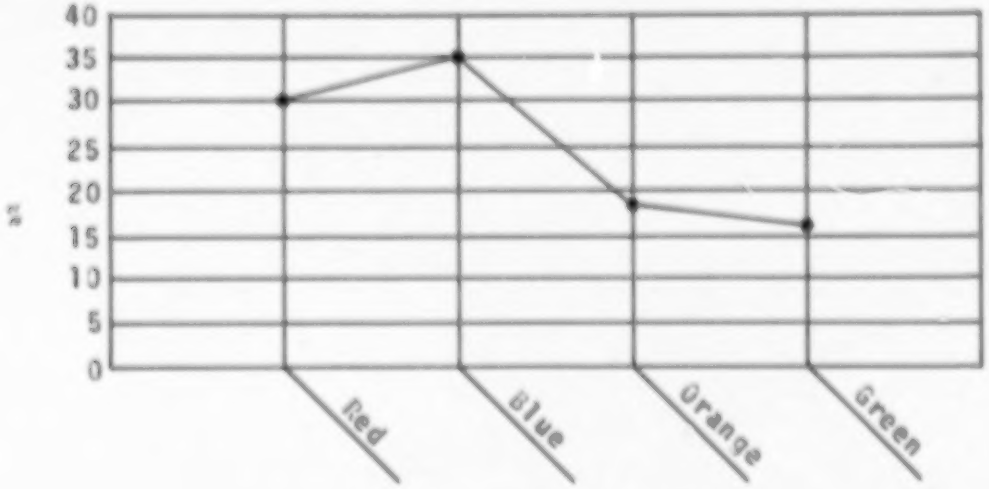
Note: The purpose of the chart is to organize and compare information.

Horizontal Bar Graph

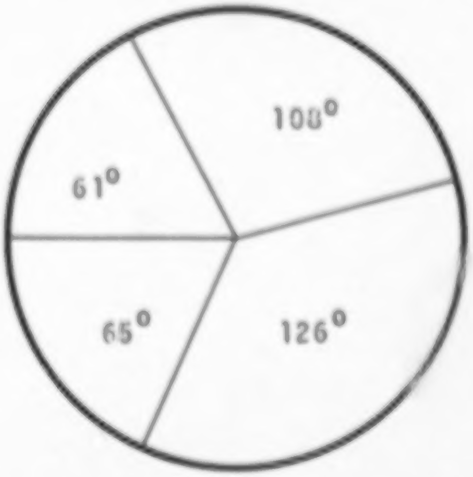


Note: The purpose of a bar graph is to organize the information in picture form so that it may be compared visually.

Line Graph



Circle Graph



Red: $\frac{30}{100}$ X 360° = 108°

Blue: $\frac{35}{100}$ X 360° = 126°

Orange: $\frac{18}{100}$ X 360° = 65°

Green: $\frac{17}{100}$ X 360° = 61°

Exercises

1. Refer to the example problem and make 30 throws instead of 20 throws. Make a chart - compare the per cent of each color to the example. Can you make a bar graph?

2. Make a chart, titled integers 1 to 100, showing how many even numbers, prime numbers, perfect numbers, Fermat primes, numbers evenly divisible by six, and Merseene primes. (Note: For the above numbers we are interested in only how many. Try the library for any of these you do not know.) Make a line graph.

3. Go to a parking lot and count the number of Fords, Chevrolets, Oldsmobiles, and Plymouths.

   a. Chart the number of each make of car.

   b. Make a circle graph.

Seating Game

Make a seating chart for your class room.

Name each desk with this symbol (□ △) where the number in the position of the square shows the column and the letter in the position of the triangle shows the row.

g.						
f.						
e.						
d.					(5,d)	
c.						
b.	(1,b)					
a.	(1,a)	(2,a)				
	1	2	3	4	5	6

Front of Room

Let each desk be represented by a rectangle in the above chart.

1. Write each desk's name in the lower part of the rectangle.
2. Write the student's name in the upper part.
3. a. Who sits in desk (3,d)?
   b. Who sits in desk (1,a)?
4. Mark an X through desk (4, f).

Practical Application

Reading the Arkansas State Withholding Tax chart, find the rate of state withholding for each of the following:

1.	Semi-monthly income	$ 212.00
2.	Weekly income	94.75
3.	Monthly income	510.00
4.	Bi-weekly income	260.52
5.	Weekly income	82.74
6.	Bi-weekly income	700.10
7.	Monthly income	1500.65

FORMULA 4

FORMULA FOR CALCULATING ARKANSAS STATE WITHHOLDING TAX

Net Taxable Weekly Income			Net Taxable Bi-weekly Income		
From	Thru	Rate %	From	Thru	Rate%
.00	60.32	1.1	.00	130.65	1.1
60.33	71.17	1.2	130.66	142.35	1.2
71.18	82.87	1.3	142.36	165.75	1.3
82.88	95.55	1.4	165.76	191.10	1.4
95.56	117.97	1.5	191.11	235.95	1.5
117.98	127.72	1.6	235.96	255.45	1.6
127.73	137.47	1.7	255.46	274.95	1.7
137.48	147.22	1.8	274.96	294.45	1.8
147.23	161.85	1.9	294.46	323.70	1.9
161.86	178.42	2.0	323.71	356.85	2.0
178.43	192.07	2.1	356.86	384.15	2.1
192.08	212.55	2.2	384.16	425.10	2.2
212.56	226.20	2.3	425.11	452.40	2.3
226.21	239.85	2.4	452.41	479.70	2.4
239.86	253.50	2.5	479.71	507.00	2.5
253.51	263.25	2.6	507.01	526.50	2.6
263.26	273.00	2.7	526.51	546.00	2.7
273.01	292.50	2.8	546.01	585.00	2.8
292.51	312.00	2.9	585.01	624.00	2.9
312.01	331.00	3.0	624.01	662.00	3.0
331.01	350.00	3.1	662.01	700.00	3.1
350.01	375.00	3.2	700.01	750.00	3.2
375.01	400.00	3.3	750.01	800.00	3.3

"FORMULA #5"
FORMULA FOR CALCULATING ARKANSAS STATE WITHHOLDING TAX

Net Taxable Semi-monthly income			Net Taxable Monthly income		
From	Thru	Rate %	From	Thru	Rate %
.00	130.65	1.0	.00	261.30	1.0
130.66	122.35	1.1	261.31	284.70	1.1
142.36	165.75	1.2	284.71	331.50	1.2
165.76	191.10	1.3	331.51	382.20	1.3
191.11	235.95	1.4	382.21	471.90	1.4
235.96	255.45	1.5	471.91	510.90	1.5
255.46	274.95	1.6	510.91	549.90	1.6
274.96	294.45	1.7	549.91	588.90	1.7
294.46	323.70	1.8	588.91	647.40	1.8
323.71	356.85	1.9	647.41	713.70	1.9
356.86	384.15	2.0	713.71	768.30	2.0
384.16	425.10	2.1	768.31	850.20	2.1
425.11	452.40	2.2	850.21	904.80	2.2
452.41	479.70	2.3	904.81	959.40	2.3
479.71	507.00	2.4	959.41	1014.00	2.4
507.01	526.50	2.5	1014.01	1053.00	2.5
526.51	546.00	2.6	1053.01	1092.00	2.6
546.01	585.00	2.7	1092.01	1170.00	2.7
585.01	624.00	2.8	1170.01	1248.00	2.8
624.01	662.00	2.9	1248.01	1324.00	2.9
662.01	700.00	3.0	1324.01	1400.00	3.0
700.01	750.00	3.1	1400.01	1500.00	3.1
750.01	800.00	3.2	1500.01	1600.01	3.2

Code Messages

Examine the code table and the decoded messages at the right.

0 1 2 3 4 5 6 7 8 9	857836 == 7474
a b c d e f g h i j	SPRING IS HERE
k l m n o p q r s t	1829474 == 4078
u v w x y z	VICTORY IS OURS

Any letter or digit in one of the columns may stand for any other letter or digit in the same column.

To decode a message, list all possible replacements under each numeral, then select those letters that form words. Can you decipher these messages?

1. 7083 = 249   2. 54024 = 507024039   3. WYNOI = PAD

UNIT XII

COMPUTER BASED MATH

A. Base Eight

1. Count from 51 through 100 in base eight. Write the names for these numbers in base eight.

2. The following names for numbers are written in decimal form (base 10). Rename each using base eight notation.

   a. 37

   b. 79

   c. 143

   d. 465

   e. 1304

3. Each of the following is a name for a number in a base eight system. Rename each as a decimal number (base 10).

   a. 174

   b. 75

   c. 44

   d. 203

   e. 777

Exercises

1. Add the following in base 8 notation.

$\begin{array}{r} 35 \\ +61 \\ \hline \end{array}_{\text{eight}}$ $\begin{array}{r} 126 \\ +403 \\ \hline \end{array}_{\text{eight}}$ $\begin{array}{r} 724 \\ +454 \\ \hline \end{array}_{\text{eight}}$ $\begin{array}{r} 470 \\ +217 \\ \hline \end{array}_{\text{eight}}$ $\begin{array}{r} 3203 \\ +1646 \\ \hline \end{array}_{\text{eight}}$

Check your results using decimals (base ten).

2. Subtract the following in base 8 notation.

$\begin{array}{r} 76 \\ -34 \\ \hline \end{array}_{\text{eight}}$ $\begin{array}{r} 53 \\ -27 \\ \hline \end{array}_{\text{eight}}$ $\begin{array}{r} 204 \\ -\ 65 \\ \hline \end{array}_{\text{eight}}$ $\begin{array}{r} 620 \\ -256 \\ \hline \end{array}_{\text{eight}}$ $\begin{array}{r} 712 \\ -305 \\ \hline \end{array}_{\text{eight}}$

Weird Operations

Can you work these problems? Study the four examples of each operation.

* operation	△ operation	□ operation
7 * 4 = 4	2 △ 3 = 7	14 □ 3 = 1
10 * 16 = 16	5 △ 8 = 18	40 □ 6 = 8
3 * 1 = 1	15 △ 2 = 32	26 □ 5 = 3
89 * 72 = 72	0 △ 5 = 5	64 □ 10 = 12
1. 22 * 0 =	6. 7 △ 11 =	11. 8 □ 1 =
2. 9 * 51 =	7. 4 △ = 14	12. 18 □ 4 =
3. 14 * 5 =	8. 12 △ 1 =	13. 20 □ = 6
4. 6 * 34 =	9. △ 2 = 20	14. □ 7 = 20
5. 2 * 2 =	10. 1 △ 1 =	15. 4 □ 1 =

Exercises

The following problems are in base eight notation. Find the product and write your answer in base eight notation.

1. $\begin{array}{r} 7 \\ \underline{\text{X } 6} \end{array}$ $\underline{\qquad}_{\text{eight}}$

2. $\begin{array}{r} 26 \\ \underline{\text{X } 22} \end{array}$ $\underline{\qquad}_{\text{eight}}$

3. $\begin{array}{r} 34 \\ \underline{\text{X } 70} \end{array}$ $\underline{\qquad}_{\text{eight}}$

4. $\begin{array}{r} 63 \\ \underline{\text{X } 47} \end{array}$ $\underline{\qquad}_{\text{eight}}$

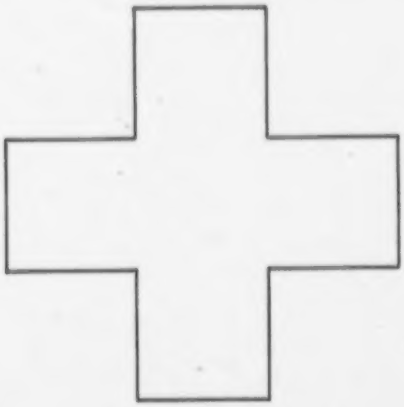
5. $\begin{array}{r} 205 \\ \underline{\text{X } 62} \end{array}$ $\underline{\qquad}_{\text{eight}}$

6. $\begin{array}{r} 417 \\ \underline{\text{X } 135} \end{array}$ $\underline{\qquad}_{\text{eight}}$

7. $\begin{array}{r} 673 \\ \underline{\text{X } 55} \end{array}$ $\underline{\qquad}_{\text{eight}}$

8. $\begin{array}{r} 100 \\ \underline{\text{X } 100} \end{array}$ $\underline{\qquad}_{\text{eight}}$

Squaring A Cross



Can you draw four straight lines that divide the cross into five pieces which can be rearranged to form a square?

B. Base Two

EXERCISES

1. Write the names of the numbers from ten to thirty inclusive in binary numerals.
2. What base ten numbers are represented by these binary numerals?

   a. 1101 c. 100011 e. 111110 g. 11001 i. 111011
   b. 1011 d. 11000 f. 111011 h. 10111 j. 111101

3. Using suggested short cut methods, rename these base ten numbers using binary numerals.

   a. 83 b. 104 c. 41 d. 213 e. 59

4. Add:

   a. $\begin{array}{r} 11011 \\ \underline{1101} \end{array}_{\text{two}}$ b. $\begin{array}{r} 111111 \\ \underline{1001} \end{array}_{\text{two}}$ c. $\begin{array}{r} 100011 \\ \underline{11001} \end{array}_{\text{two}}$ d. $\begin{array}{r} 11100 \\ \underline{1111} \end{array}_{\text{two}}$

   e. $\begin{array}{r} 11011 \\ \underline{1001} \end{array}_{\text{two}}$

   Check your accuracy in base ten.

5. Subtract:

   a. $\begin{array}{r} 11011 \\ \underline{1101} \end{array}_{\text{two}}$ b. $\begin{array}{r} 111111 \\ \underline{1001} \end{array}_{\text{two}}$ c. $\begin{array}{r} 100011 \\ \underline{11001} \end{array}_{\text{two}}$ d. $\begin{array}{r} 11100 \\ \underline{1111} \end{array}_{\text{two}}$

   e. $\begin{array}{r} 11011 \\ \underline{1001} \end{array}_{\text{two}}$

6. Multiply:

   a. $\begin{array}{r} 111 \\ \underline{11} \end{array}_{\text{two}}$ b. $\begin{array}{r} 1001 \\ \underline{101} \end{array}_{\text{two}}$ c. $\begin{array}{r} 1110 \\ \underline{110} \end{array}_{\text{two}}$ d. $\begin{array}{r} 110111 \\ \underline{1011} \end{array}_{\text{two}}$

   e. $\begin{array}{r} 11101 \\ \underline{1101} \end{array}_{\text{two}}$

C. Base Five

EXERCISES

1. Count from 50 to 100 using base 5 numerals.

2. What decimal numbers are represented by the following base 5 numerals?

   a. 31_{five} b. 24_{five} c. 420_{five} d. 12_{five} e. 103_{five}

   f. 2133_{five}

3. Rename the following decimals with base 5 numerals:

   a. 73 b. 124 c. 346 d. 47 e. 625 f. 160

4. Add:

$$\begin{array}{r}30\\+24\\\hline\end{array}_{\text{five}}\qquad\begin{array}{r}42\\+13\\\hline\end{array}_{\text{five}}\qquad\begin{array}{r}123\\+422\\\hline\end{array}_{\text{five}}\qquad\begin{array}{r}403\\+241\\\hline\end{array}_{\text{five}}\qquad\begin{array}{r}341\\+123\\\hline\end{array}_{\text{five}}$$

5. Subtract:

$$\begin{array}{r}32\\-23\\\hline\end{array}_{\text{five}}\qquad\begin{array}{r}40\\-14\\\hline\end{array}_{\text{five}}\qquad\begin{array}{r}204\\-112\\\hline\end{array}_{\text{five}}\qquad\begin{array}{r}341\\-123\\\hline\end{array}_{\text{five}}\qquad\begin{array}{r}4024\\-1231\\\hline\end{array}_{\text{five}}$$

6. Multiply:

$$\begin{array}{r}40\\\times 24\\\hline\end{array}_{\text{five}}\qquad\begin{array}{r}32\\\times 14\\\hline\end{array}_{\text{five}}\qquad\begin{array}{r}242\\\times 32\\\hline\end{array}_{\text{five}}\qquad\begin{array}{r}312\\\times 103\\\hline\end{array}_{\text{five}}\qquad\begin{array}{r}223\\\times 341\\\hline\end{array}_{\text{five}}$$

UNIT XIII

REFUELING THE BRAIN

A. Whole numbers and fractions

In each problem show the number of times both the denominator and numerator are exactly divisible by the numbers 2, 3, 5, and 7, and then write the fractions in lowest terms.

1.	Divisible	Lowest Terms
a. $\frac{12}{16}$	______	______
b. $\frac{18}{36}$	______	______
c. $\frac{24}{42}$	______	______
d. $\frac{54}{135}$	______	______
e. $\frac{128}{224}$	______	______
f. $\frac{70}{245}$	______	______

2. Change the following to fractions in lowest terms.

a. $\frac{27}{6}$ c. $\frac{10}{16}$

b. $\frac{14}{35}$ d. $\frac{77}{10}$

3. Solve:

a. $7\frac{2}{3} + 9\frac{3}{4} + 11\frac{1}{2} =$ d. $8 + \frac{7}{4} + \frac{8}{3} + \frac{7}{2} =$

b. $\frac{9}{10} + \frac{7}{12} + \frac{5}{4} + \frac{2}{3} =$ e. $14\frac{3}{4} + 30\frac{1}{2} + 4 =$

c. $12\frac{1}{12} + 24\frac{1}{24} + 36\frac{1}{36} =$ f. $\frac{4}{5} + \frac{5}{6} + \frac{7}{10} =$

4. A golfer drives a ball 180 3/4 yds., 253 7/8 yds., 33 1/3 yds., and then putts 2 5/8 yds. How many yards was the ball played? __________

5. Find the difference of the sum of 7 7/8 and 3 3/4, and the sum of 2 1/5 and 4 1/2.

a. sum ______________
b. sum ______________
c. difference __________

6. A fountain pen and pencil set sells for $7.50. The pen sells for 2/3 of the price of the set.

a. What fractional part does the pencil sell for? ______________

b. How much does the pencil sell for? ______________

7. How much will 55 1/2 feet of wire cost at 3/4¢ per foot? ______________

8. Solve each:

a. 6 x 2/3 = ______________
b. 5/8 x 4/15 = ______________
c. 8 5/8 x 2/3 = ______________
d. 6 7/8 x 22 = ______________
e. 4 2/4 x 5 1/4 = ______________
f. 3/5 x 2/3 x 5/8 = ______________

9. A man drove 220 miles in 6-2/3 hours. What was his average speed per hour? ______________

10. Solve:

a. Divide 7/8 by 7/16 = ___________
b. Divide 4 1/16 into 15 = _________
c. 4 1/2 ÷ 6 1/4 = ______________

11. A reciprocal of a number is one divided by that number.

Give the reciprocal of:

a. 12 =
b. 2 1/2 =
c. 1/6 =
d. 5/4 =
e. 3 1/3 =

12. Find the difference between 3 1/3 and its reciprocal. ______________

B. Decimals

Exercise

1. Write in decimal form

a. One hundred fifty-six millionths ____________

b. Nineteen ten thousandths ____________

c. Forty-five and sixty-five hundredths ____________

2. Match the items in Column A with the items in Column B.

	A	B
____ a.	.1	(1) .875
____ b.	3/4	(2) 5/8
____ c.	7/8	(3) .4
____ d.	.625	(4) 1/6
____ e.	.125	(5) .833
____ f.	5/6	(6) 1/2
____ g.	.16 2/3	(7) 1/10
____ h.	2/5	(8) 1/8
____ i.	.50	(9) .75

3. Change each decimal to a fraction. Show your work.

a. .34 = ________

b. .285 = ________

c. .005 = ________

d. .375 = ________

e. .0013 = ________

4. Change each fraction to a decimal and round off the result to thousandths.

a. 4/9 =

b. 7/24 =

c. 7/12 =

d. 2/15 =

e. 3/32 =

5. Round off the following:

   a. 35.635 to hundredths ____________________

   b. 58.063 to tenths ____________________

   c. .0071 to thousandths ____________________

6. Solve:

   a. 87 + 362.23 + 23.5 + 816.07 = ____________________

   b. 8.62 + .123 + 7.5 + 75 = ____________________

   c. From 293.3 take 24.61 = ____________________

   d. Subtract .917 from 1.1654 ____________________

   e. Take 4.578 from 10.39 ____________________

7. Multiply:

   a. 545 by 39.06 ____________________

   b. 57.98 by 56 ____________________

   c. .054 by 1283 ____________________

   d. .82 and 39.98 ____________________

8. Divide: Round off to hundredths

   a. 22 by 26 ____________________

   b. 83.52 by 116 ____________________

   c. .72 by .9 ____________________

   d. 87.5 into 76.82 ____________________

9. Give the following answer in decimal form:

   $14\frac{1}{5} + 12.5 + 128.675 + 15\frac{7}{8} + .50 =$ ____________________

C. Number Sequence

Exercises

Find the next two terms in each sequence.

1. a. 1 3 5 7 9 ______ ______

   b. 2 4 6 8 10 ______ ______

   c. 45 50 65 70 85 90 ______ ______

   d. 24 23 22 21 20 ______ ______

   e. 75 72 69 66 ______ ______

   f. 1 3 6 10 15 21 ______ ______

   g. 1 $\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$ $\frac{1}{5}$ $\frac{1}{6}$ ______ ______

   h. $\frac{11}{12}$ $\frac{12}{13}$ $\frac{13}{14}$ $\frac{14}{15}$ ______ ______

   i. $\frac{25}{4}$ $\frac{22}{6}$ $\frac{19}{8}$ $\frac{16}{10}$ ______ ______

   j. $\frac{3}{4}$ $\frac{6}{7}$ $\frac{12}{10}$ $\frac{24}{13}$ $\frac{48}{16}$ ______ ______

2. Find the sum of the first 6 terms of the above sequences:

   a. c. e.

   b. d. f.

Note: A sequence in which each term is obtained by adding or subtracting the same number to the previous term is an arithmetic progression.

---

3. Which of the sequences above are arithmetic progressions?

Exercises

List the next 2 terms of the following "special" progressions.

1. a. 2, 4, 8, 16, 32, 64, ... ______ ______

   b. 3, 9, 27, 81, ... ______ ______

2. Find 2 more terms at the beginning and 2 at the end of each "special" progression.

   a. ______ , ______ , 12 , 24 , 48 , ______ , ______

   b. ______ , ______ , $\frac{1}{4}$, 1 , 4 , ______ , ______

   c. ______ , ______ , 5 , 1 , $\frac{1}{5}$, ______ , ______

   d. ______ , ______ , 3 , $\frac{3}{2}$, $\frac{3}{4}$, ______ , ______

3. Find 2 more terms at the end of each "special" progression.

   a. $\frac{1}{3}$, $\frac{2}{3}$, $\frac{4}{3}$, $\frac{8}{3}$, ... ______ ______

   b. $\frac{1}{2}$, $\frac{2}{6}$, $\frac{4}{18}$, $\frac{8}{54}$, ... ______ ______

   c. $\frac{2}{3}$, $\frac{4}{9}$, $\frac{8}{27}$, $\frac{16}{81}$, ... ______ ______

   d. 3 , $\frac{9}{4}$, $\frac{27}{16}$, $\frac{81}{64}$, ... ______ ______

Note: A sequence in which each term is obtained by multiplying the previous term by the same number is a geometric progression.

D. Percentage

Exercises

1. Change the following decimals to per cents.

a. .03 ____
b. .2 ____
c. .0025 ____
d. .0825 ____
e. .004 ____
f. .076 ____
g. .125 ____
h. .2468 ____
i. .005 ____

2. Change the following per cents to fractions.

a. 7 1/2% ____
b. 125% ____
c. 5% ____
d. 8.1% ____
e. 1/4% ____
f. 309% ____
g. 20% ____
h. 7 3/7% ____

3. Jack puts 1/4 of his allowance into savings bonds each week. What % of his allowance does he save? ________

4. Jerry got 4/5 of his math test correct. John got 85% on his test. a. Which had the higher mark? ________

b. What was Jerry's mark? ________

5. Find:

a. 7% of 152 ____
b. 15% of 90 ____
c. 20% of $65 ____
d. 40% of 2.5 ____
e. 125% of 1264 ft. ____
f. 200% of $560 ____
g. 18% of 4.15 ____
h. 3.2% of 193 ____
i. 1/4% of 800 ____
j. 3/11% of 300 ____

6. Find what per cent one number is of another.

a. 12 is ________ % of 16.
b. 32 is ________ % of 48.
c. 88 is ________ % of 160.
d. 36 is ________ % of 192.
e. 13 lbs. is ____ % of 175 lbs.

7. Find the whole number when a per cent is known:

a. 24 = 33 1/3% of ________ .

b. 46 is 10% of __________ .

c. 72 is 60% of __________ .

d. 45 is 50% of ________ .

e. 100 is 10% of_______ .

8. Fill in the blanks.

a. On a test Joe got 12 examples correct out of 15. The percent of examples he got correct was_________ %.

b. A seaman was told that he was 20% overweight. If he weighs 180 lbs., he must lose ________ lbs. before he is acceptable.

c. A dealer's commission on an automobile was 27% of its sale price. The dealer earned ________ by selling a car for $1452.

d. A salesman earned $58 a week when working on a commission of 35% of his sales. His total sales were __________ .

e. A study showed that an important firm was 20% over staffed. If it employed 720, people the firm would have to dismiss _________ employees.

f. During a recent year a hardware store collected all but 9/10% of its total sales of 95,000 dollars. _________ amount of money was not collected.

g. A clerk's weekly salary was raised from $20 to $24. This was a ________ percent increase.

h. Of $690 collected for charity, 7/8% was used to pay expenses. ______ was actually used for charity.

i. A camera priced at $27.50 was sold for 80% of this price, the camera sold for ________ .

j. The price of eggs increased from $ .26 per dozen to $ .54 per dozen, which was a ______ percent increase.

9. One of the answers is correct. Put the number which corresponds to the correct answer in space provided at left.

____ a. The sugar content of strawberries is equal to 52.7% of their weight. 50 lbs. of strawberries would have a sugar content of: (1) 264% (2) 26.3 1/2% (3) 2.63% (4) 2635% (5) None

____ b. During a sale a merchant sold 159 shirts or 75% of the shirts in stock. The number of shirts he had before the sale was: (1) 2.12 (2) 12100 (3) 21.2 (4) 212 (5) None

____ c. If 35% of a number is 70, the number is: (1) .200 (2) 200 (3) 2.00 (4) 20 (5) None

____ d. It was found that 5 out of each 1000 ships which were convoyed in the Pacific were sunk. The percentage sunk was: (1) .5% (2) 5% (3) .005% (4) 500% (5) None

____ e. While at target practice a gunner made 27 hits out of 32 shots. The percentage of hits was: (1) 84 4/9% (2) .84% (3) 8.4% (4) .084% (5) None

____ f. In an insurance company which employs 2700 people 165 absentees were reported one day. The percent of absentees reported on that day was: (1) .6 1/9% (2) 6 1/9% (3) .06 1/9% (4) .05 5/9% (5) None

____ g. There are 960 pupils in Childress School. 55% can swim. The number that can swim is: (1) 528 (2) .528 (3) 5.28 (4) 52.8 (5) None

____ h. The average price of tomatoes last fall was $3.20 per bushel. This year it is $2.30 per bushel. The percent of decrease is (1) .028% (2) .28% (3) 28 1/8% (4) 2.8% (5) None

____ i. A bank charged .2% to collect a bill of $1680. The cost of collection was: (1) $33.60 (2) $.33 (3) $37. (4) $3.36 (5) None

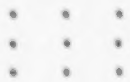
____ j. A student practiced shooting fouls in basketball. If he shot 14 out of 24 shots, the percent of his successful shots was: (1) 58 1/3% (2) 33 1/3% (3) 66 2/3% (4) 50 2/3% (5) None

E. Sharpie Section

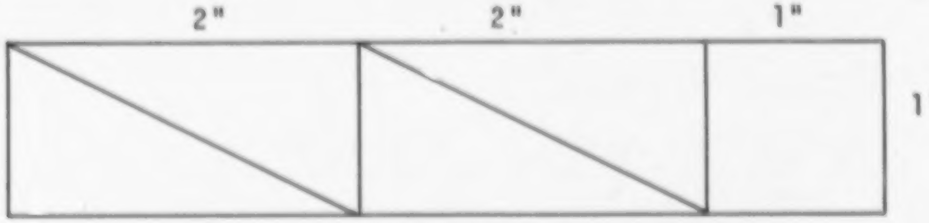
Exercises

1. Can you plant ten trees in ten rows, each row having three trees and each tree in three different rows?

2. Draw 4 straight lines through 9 dots (as shown) so as to cross out every dot. No dot can be crossed out twice, no line retraced, nor can the pencil be lifted from the paper until all 9 dots have been crossed out.



3. Cut it out then answer the questions.



Can you make a square using all 5 pieces?
Can you make a square using only 4 pieces?

4. Multiply:

$12345679 \times 9 =$
$12345679 \times 18 =$
$12345679 \times 27 =$
$12345679 \times 36 =$
$12345679 \times 45 =$
$12345679 \times 54 =$
$12345679 \times 63 =$
$12345679 \times 72 =$
$12345679 \times 81 =$

Is there anything unusual about the answers you get?
How are they related to the multiplier in each case?

5.

$$\begin{aligned} 1 + 2 + 1 &= 2^2 \\ 1 + 2 + 3 + 2 + 1 &= 3^2 \\ 1 + 2 + 3 + 4 + 3 + 2 + 1 &= 4^2 \end{aligned}$$

Can you continue this pattern until you reach 10^2?
Can you explain the pattern and its relation to the result?

6. 123456789 x 3 =
123456789 x 30 =
123456789 x 57 =

123456789 x 6 =
123456789 x 33 =
123456789 x 60 =

123456789 x 12 =
123456789 x 39 =
123456789 x 66 =

123456789 x 21 =
123456789 x 48 =
123456789 x 75 =

Multiply these problems.
Is there anything unusual about the answers?
Find the sum of the answers in each group and compare answers to multipliers.

7. Biblical Arithmetic:

   a. Take the number of commandments.
   b. Add the number of letters in the name of the man who received them.
   c. Subtract the number of Jacob's sons.
   d. The result will be the number of patriarchs.

8. Political Arithmetic:

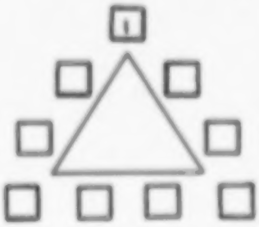
   a. Take the number of states in U.S.
   b. Subtract the number of Senators from each state.
   c. Subtract the number of original colonies.
   d. Produces the number of Presidents of U.S. to date.

9. Sporty Arithmetic:

   a. Take the number of men on a football team.
   b. Add the number of men on a baseball team.
   c. Divide by the number of men on a basketball team.
   d. Add the number of men on an ice hockey team.
   e. Your answers will be the number of men on a softball team.

10. Arrange the following units of measure in order of length from the smallest to the largest: a. inch b. cable c. fathom d. furlong e. yard f. rod g. hand h. centimeter i. nautical mile j. cable length.

11. Use all of the elements of the set $\{1, 2, 3, . . . 9\}$. Arrange them around the triangle so that there is exactly 4 numbers on each side that total 17 in any direction. Do not repeat a number. (Can you find more than one solution?)



12. A farmer wants to plant a tree in a square plot. He wants it planted 30' from one corner, 40' from another corner, and 50' from another corner. How big is the square?

13. Provide the answers to the last three problems based on the pattern shown in the first three.

$$\begin{array}{r} 11 \\ \underline{\times 11} \\ 121 \end{array} \qquad \begin{array}{r} 111 \\ \underline{\times\ 111} \\ 12,321 \end{array} \qquad \begin{array}{r} 1111 \\ \underline{\times\ 1111} \\ 1,234,321 \end{array} \qquad \begin{array}{r} 11111 \\ \underline{\times\ 11111} \end{array}$$

$$\begin{array}{r} 111111111 \\ \underline{\times\ 111111111} \end{array} \qquad \begin{array}{r} 1111111111 \\ \underline{\times\ 1111111111} \end{array}$$